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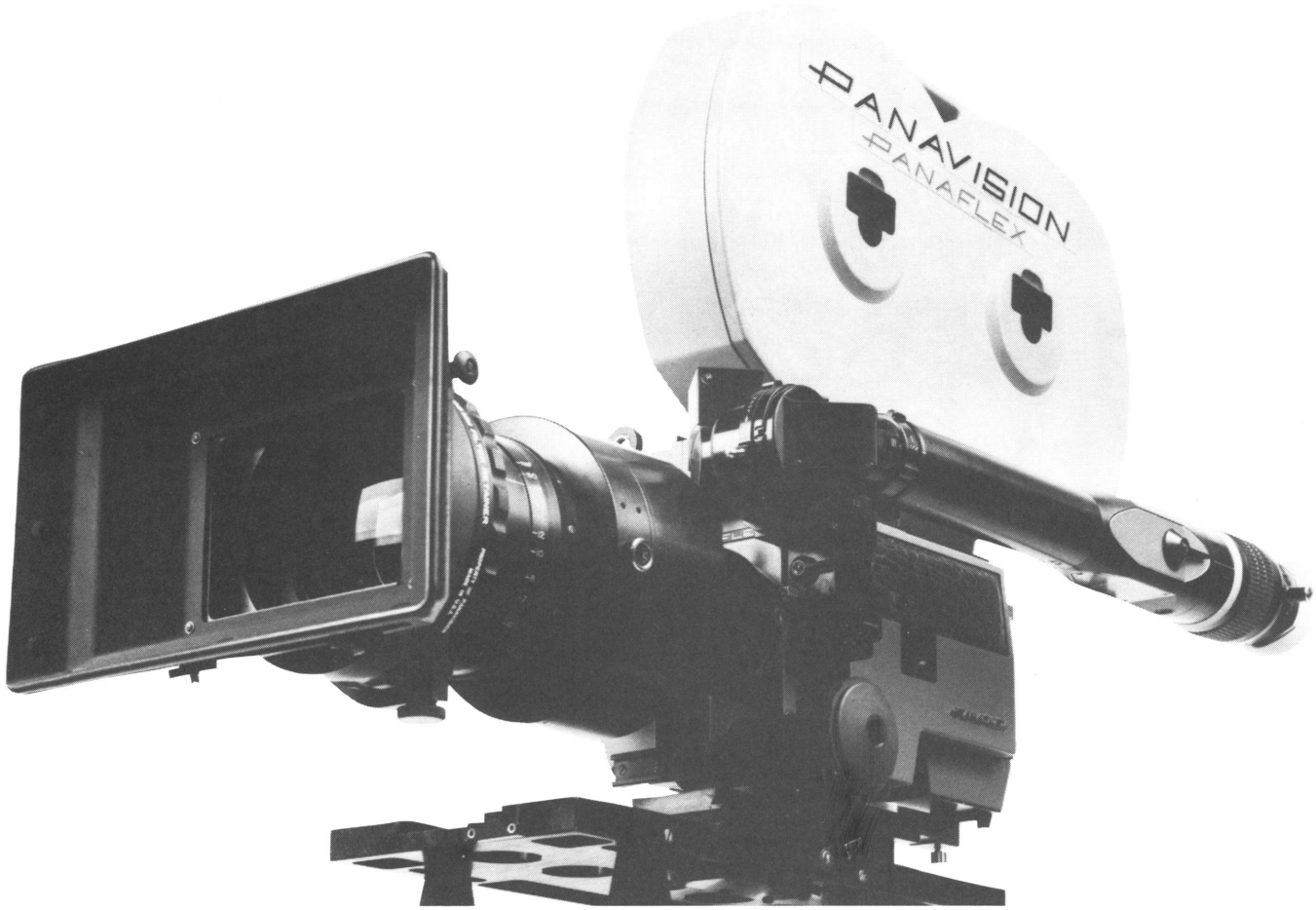

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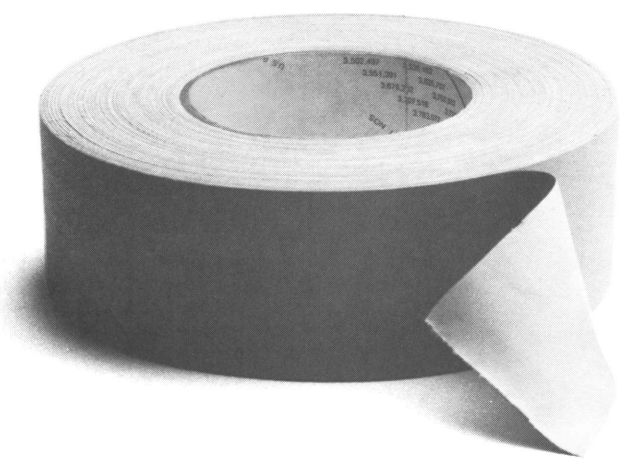

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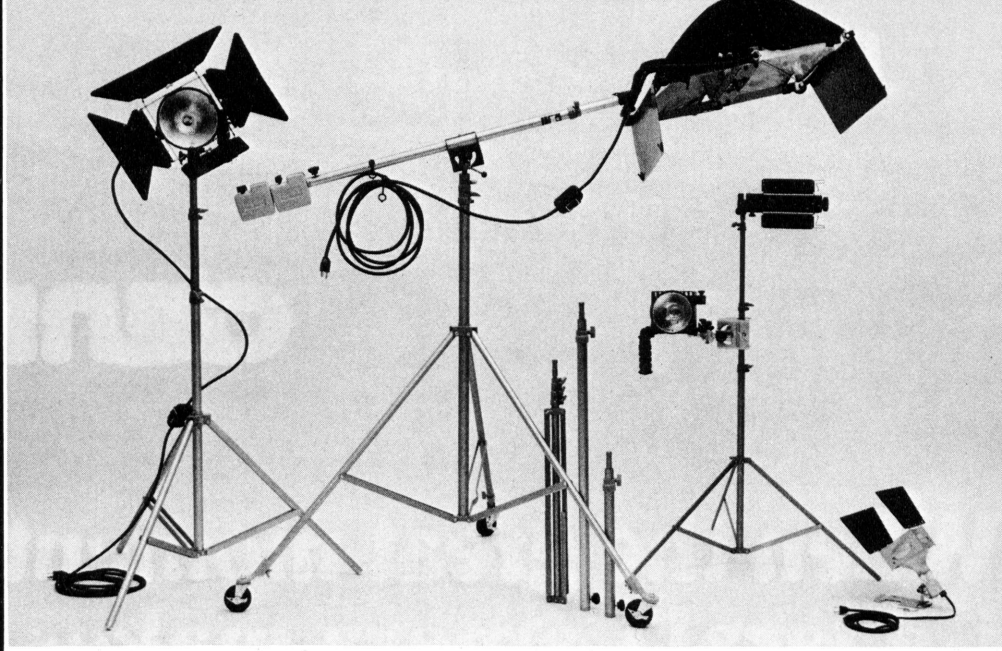

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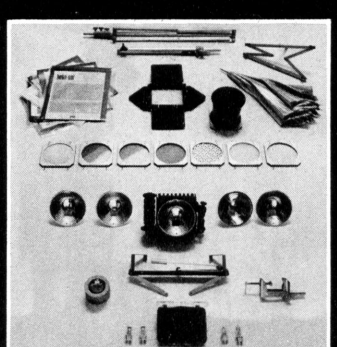

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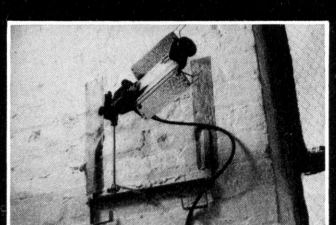

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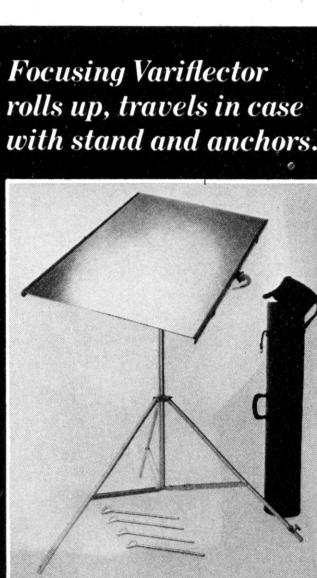

The International Journal of Film and Video Production Techniques

May 1986 Vol. 67 No. 5

American Cinematographer

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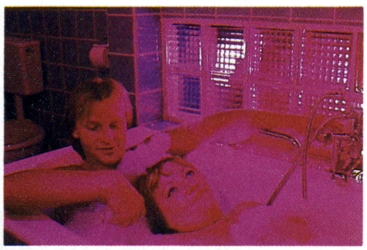

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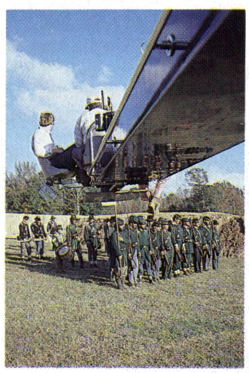

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On Our Cover:
Rich Rossovich and Tom Cruise, Navy fighter pilots in *Top Gun*. Photo by Ralph Nelson.

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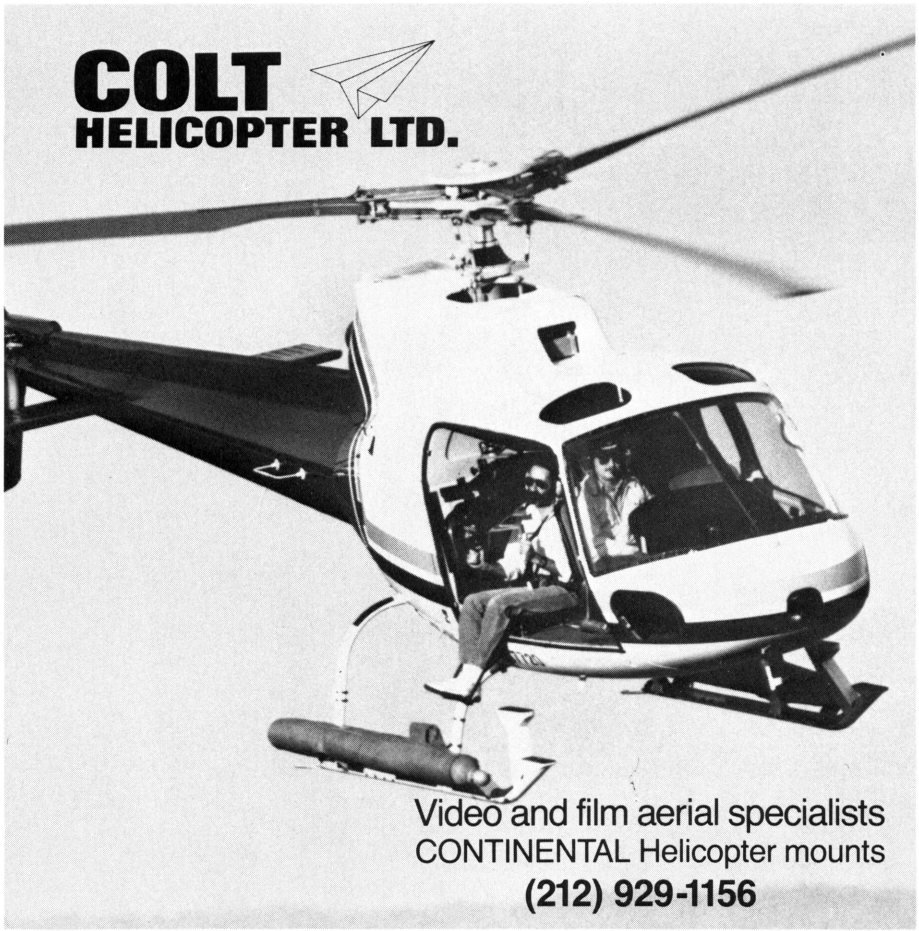

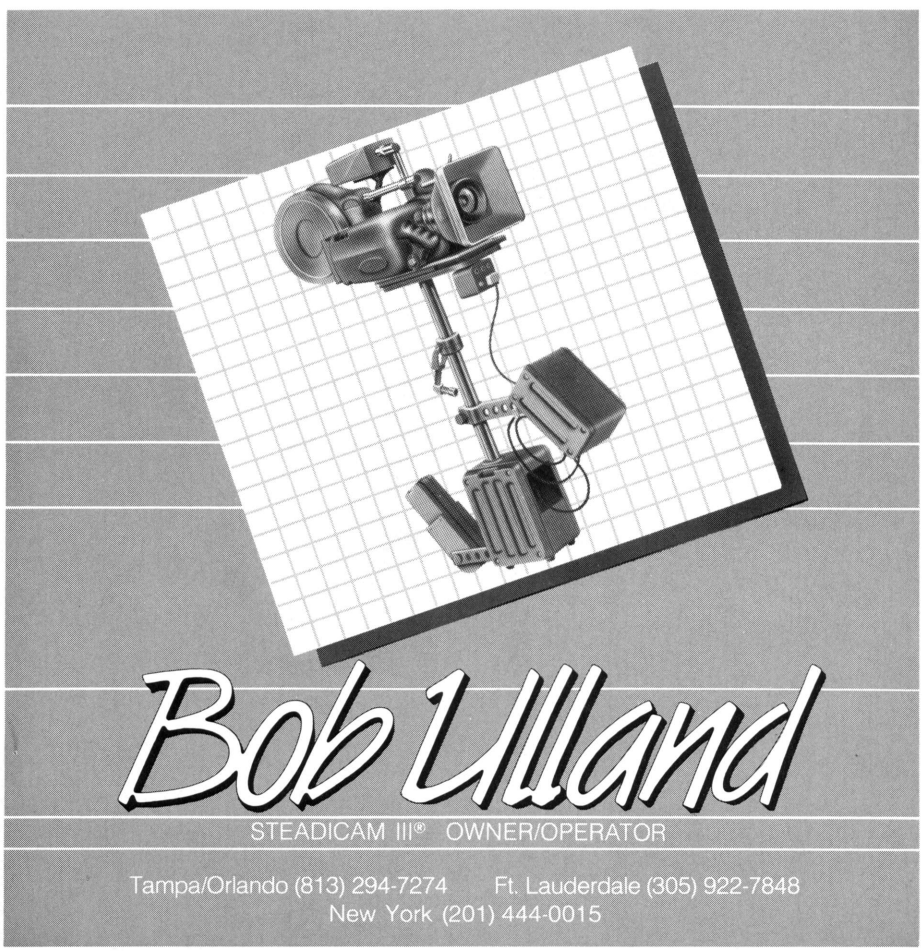

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The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as Directors of Photography and have demonstrated outstanding ability. Not all cinematographers can place the initials ASC *after their names.* ASC *membership has become one of the highest honors that can be bestowed upon a professional cinematographer, a mark of prestige and distinction.*

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Two Canon conversions that do the job right

The small lens in the picture at left is a 20mm Canon. The two big lenses are Clairmont Canon conversions – 14mm and 20mm.

There are other Canon conversions around. But they're generally just a Canon lens with a new mount. Canons are excellent still-camera lenses, of course. But for motion-picture use, they can use substantial changes.

Image movement during focussing

For example: with a still camera, you never change focus during a shot. If the image moves around while you're focussing, it doesn't matter. Canon's expert designers could prevent that movement. But it's not necessary for their purposes; so they don't.

No movement in our conversion

As part of our conversion, we stabilize every lens element and element-group. We replace Canon's plastic cam-followers with brass. We reposition each retaining ring, re-time each floating element. When we're through, there's no image movement during focussing. It's gone.

Three other things about the changes we make: Firstly, we fine-tune each *individual* lens, using our test projector. Canon's mass-production numbers don't let them spend that much time on every lens they make.

Secondly, our conversion makes the lens more rugged. Canon's designers don't need to anticipate the hard life of a motion-picture rental lens. Our Canon lenses are better than new; and they *stay* better than new.

Thirdly, we add six features designed for the motion-picture pro. Here they are:

Markings

(1) As you can see, we make the lens barrel bigger. That lets us make the distance markings bigger, further apart and more numerous. On the Canon in the photo, there's no marking between 10 feet and Infinity. On both our lenses, there's a 20 foot.

Expanded Focus

(2) We've expanded the focus movement. Measured around the lens circumference, the focus travel on the Canon is three inches. On ours, it's six inches. Easier to focus, more room for your follow-focus marks. (And you don't have to turn your head sideways to read ours.)

Remote Iris

(3) There are gear teeth cut into the Iris Ring. You can use the mechanical Remote Iris Control, the electronic Remote Iris Control or the Speed Aperture Computer.

Fits Matte Box

(4) As you can see, our lens front is bigger. It fits the rear opening of the ARRI 6.6 Matte Box. No light leaks. Standard 6.6 square filters.

Five filters

(5) Because it's bigger, you can use more filters on the lens itself, with no vignetting. The original Canon 14mm lets you mount one Series 9 filter. With our 14mm, you can mount three 138mm filters. On our 20mm, you can mount five.

Quieter lens for quieter cameras and big closeups

(6) We make the lenses about 20% quieter. That's significant with lenses that focus as close as these do—and with our super-quiet adjustable-pitch 35BLs.

"No distortion," says Director of Photography Robert Primes

Used 14mm lens to shoot entire spot

Director of Photography Robert Primes used one of our 14mm lenses to shoot a whole Ford commercial. The camera was mounted on the front bumper of a car, facing down the road.

The commercial used time lapse (one frame per second) to simulate the car traveling at 2,000 mph. The crew, the car and the lens covered about 700 miles—shooting in the desert, through downtown L.A., on freeways at night, along snow-covered mountain roads, across bridges.

Sense of Motion

"With a lens that wide mounted at bumper level, there was a tremendous sense of motion," says Bob Primes. "And we got the drama of a wide angle shot without it looking like a wide-angle *lens* shot."

"The longest scene in the commercial was a road in the desert, stretching out straight ahead, all the way to the horizon. That road was lined with telephone poles."

Straight telephone poles

"From the distance, those poles grew rapidly bigger and then flew past left and right, out of frame. As they filled the frame at the sides, they were all still straight and upright."

No distortion

"That's why it didn't look like a wide-angle lens shot," says Mr. Primes. "*Absolutely no distortion.*"

How do we make them quieter? We put an optical flat on the front, in a rubber acoustic-isolation mount. The 14mm focusses down to 10 inches from the film plane—three inches from the front of the lens.

People asked us for a 20mm car-mount lens. So we made one.

People told us they needed a 20mm for shooting in through the windshield—a two-shot of the driver and passenger. The 18mm was too wide, they said, the 24mm too tight. So we made a 20mm. PL and BNCR mounts. (The 14mm also comes in a B mount.)

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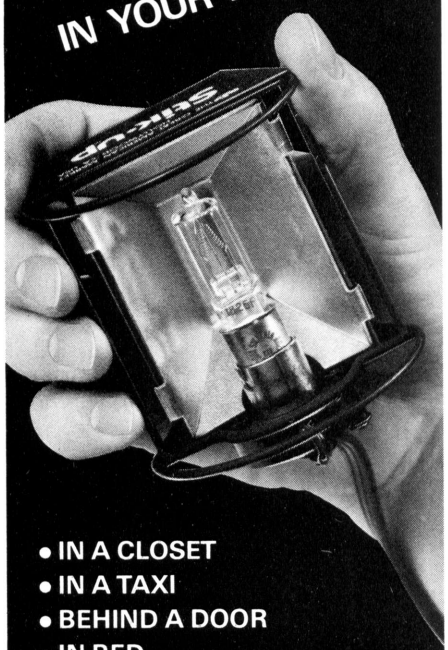

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Letters

Curved Screen Projection

In response to the query raised by Wm. E. Hewitt in the October 85 issue, as to whether special prints were ever made available to allow early Todd-A.O. productions to be shown on a deeply curved screen, I offer the suggestion that it is very unlikely. Although compensation techniques for distortion, due to screen curvature and keystoning, were possible, customizing prints for different theaters would have been a rather extravagant exercise considering the subtlety of improvement involved.

Later, when certain 70mm. films, (such as Warner's "Battle Of the Bulge") were produced specifically for showing on Cinerama style screens, slight anamorphic compression of each side of the image was found desirable to prevent distortion due to extreme curvature. Even so, when these same prints were shown on a less curved or even flat screen, the resulting distortion caused audiences little concern.

As a projectionist I have handled prints of both *Oklahoma* and *Around the World In 80 Days* and am certain that no variations within the 70mm. format were offered by the distributor. Neither was there any notation of a recommended screen type supplied with these prints.

What may be of interest to Mr. Hewitt and others is the fact that a unique hybrid format was used for *Around the World* during its initial release here in Australia and the U.K. No publicity was given this system, patrons being left to assume that it was Todd A.O. they were viewing. In fact, it was actually a special 35mm. print designed to run at 30 frames a second.

The curved screen image had an aspect ratio of 2:1 obtained by using a 1.5x (as opposed to CinemaScope's 2x) anamorphic lens. The sound was CinemaScope style 4-track magnetic but processed to yield 6 channels. Three tracks were used for the respective left centre and right stage channels while the surround track was encoded with three sub-audible "Perspecta" signals which steered sound to either the back, left or right wall speakers or in combination as required. Philips projectors, fully capable of running 70mm. prints, were installed at the time so it is a mystery why the genuine Todd A.O. version was not shown instead of this strange unnamed format. (In Britain, I believe, the process was called "Cinestage").

The Australian re-release, several years later, of *Around the World* was, however, in 70mm Todd A.O. Incidentally, besides the two features mentioned there was a third 70mm. production which ran at 30 fps, the Cinerama style travelogue titled "Miracle of Todd.A.O."

—Charles Slater.
Australia

Super 8 Misconstrued

As an independent filmmaker who uses Super 8 as a video production format, I feel the press has misconstrued the implications of the video boom for Super 8 film production. Instead of making Super 8 production obsolete, video has opened up new opportunities for Super 8 as a television production format that can rival 16mm and broadcast quality video tape.

Professionally transferred to one inch video tape, with electronic color correction and image enhancement, Super 8 offers the video producer that sought after "film" look, with the dynamic contrast range and associated color shifts that have become synonymous with high video production values. This "film" look – as I can personally attest, and as reported in the SMPTE Journal and in American Cinematographer – is the same whether the original film is 16mm or Super 8. With electronic color correction, it is extremely difficult to distinguish Super 8 from 16mm in off-the-monitor tests.

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in a format that utilizes light weight, extremely portable cameras and cassette sync-sound recorders, or single system cameras that combine picture and sound recording in a single unit. Super 8 cameras can go anywhere, operate on penlight or rechargeable batteries and film in extreme low light situations (approximately 10 foot-candles) in full color.

The potential of Super 8 as a video production format is tremendous, as evidenced by the recognition it has recently received from professional media producers – Dan Rather and his CBS crew shot Super 8 in Afghanistan for national broadcasting on CBS News, while Frank Christopher shot his Academy Award runner up "In the Name of the People" in Super 8.

—Guy B. Holt
Cambridge, MA

Not BSC

In the February issue of your publication of American Cinematographer, an article about the motion picture *Out of Africa,* Page 66, referred to David Watkin BSC as the Director of Photography.

We would wish to point out that David Watkin is not a member of this Society, although he has been invited on more than one occasion to become one of us.

Perhaps you will publish an amendment in a future issue.

—Les Ostinelli B.S.C
Vice President

Wrong Assumption

I must take exception to your author's comment in March '86 p. 76 regarding John Alonzo's alleged crew promotions. She states that the dolly grip gets "moved up" to 2nd camera assistant.

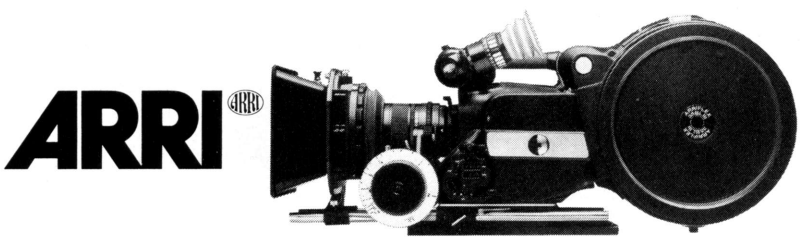
I am not aware of any area of motion picture production where a grip would be transferred to the camera dept as a camera assistant, and, in my opinion, such a move to 2nd camera assistant would be a downward step.

To suggest that such a move is an advancement only perpetuates the myth that grips are the bottom of the production ladder.

—Jonathan Woolf
Sherman Oaks, Calif

Photographed by
David Watkin
in Technovision
with Arriflex 35BL-3 cameras

OUT OF AFRICA



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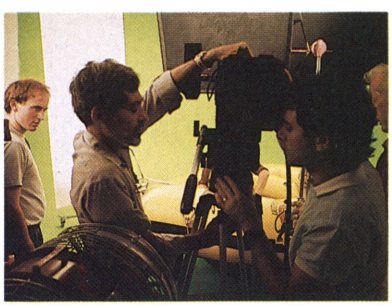
Component Matting: a New Film/Video Marriage

Simulating overcast lighting conditions of film background plate, raft is surrounded by diffused light.
Below: *Woody Omens, center, and David Griffin adjust angle of DC-35 prior to shooting foreground.*



Rock Solid Productions has successfully completed a series of electronic matting tests for Don Bellisario's new television series, "The Ultimate Adventure Company." The tests, shot on and mastered to Betacam and matted with the new Ultimatte-5, were recently screened on 35mm film for executives of Belisarius Productions and Universal Pictures Television.

"The Ultimate Adventure Company," from Belisarius Productions in association with Universal, is a series which chronicles the exploits of a safari guide who moonlights as the seeker of priceless artifacts. Shot in exotic locations all over the world, TUAC involves many dangerous stunts. "It's not practical to fly the cast all over the world to film white water rafting, hanging from hot air balloons or climbing treacherous cliffs," says Don Baer, the show's producer.

Enter Rock Solid Productions, known for its expertise in taking component video to 35mm film. "Don Baer contacted us after seeing a 35mm print of 'An American Symphony'—our Betacam-to-film demonstration. He asked if we could do a matting test in tape that could be tranferred to 35mm film for incorporation into the show," says David Griffin, co-owner of Rock Solid.

Continues Griffin, "They were looking for an alternative to film blue screen because of the demanding shoot schedule for the series and the number of mattes needed. The conventional film matting process is too slow and too costly for this series."

The component matting tests provided an opportunity to push the bounds of electronic matting, component video technology, tape-to-film transfers and electronic post-production. A rigorous series of tests were designed involving the matting of a white water rafting sequence, and an actor hanging from the gondola of a hot air balloon.

"A tremendous team of professionals came together for this project. Baer threw the weight of the series' production team into the tests. The director of photography for TUAC, Woody Omens, ASC, served as director for the tests. Paul Vlahos, president of the Ultimatte, personally supervised the operation of the new Ultimatte-5. Bill Taylor, of Illusion Arts at Universal Studios, brought 20 years of experience in film matting to the project and, of course, the gang at Image Transform was great," says Griffin. "Additionally, Panavision supplied a Panacam and Ikegami supplied an EC-35 camera."

One of the most difficult mattes involves white water rafting—precisely what was chosen for the tests. What made the tests even more challenging was that the backgrounds were shot on overcast days, resulting in very low contrast background plates.

Peter Pilafian, second unit photographer for TUAC, shot the white water background plates in Mexico on 35mm film. That film, as well as some sky footage and and other high water footage, was transferred from the film negative directly to component Betacam. All of the negative was transferred three times: with the enhancement circuit bypassed, and with the enhancement circuit at both level three and level six. "When we transformed back to film" says Griffin, "we wanted to determine at which stage of the process to put back detail. During the tests themselves we ended up using the background plates with no enhancement, and with level six enhancement. The plates at level three were not unique enough to include in the composite."

At the heart of the matting system was the Ultimatte-5. The background plates were played back on a Sony BVW-15 Betacam player. The dynamic tracking of the unit allowed Rock

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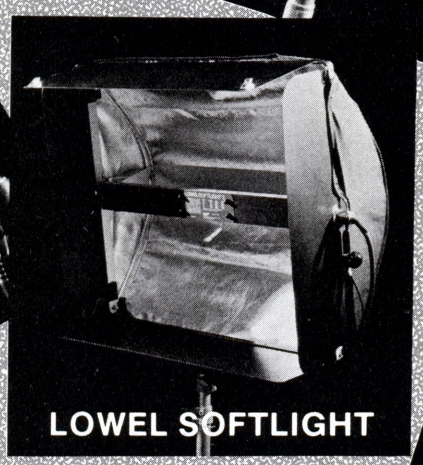

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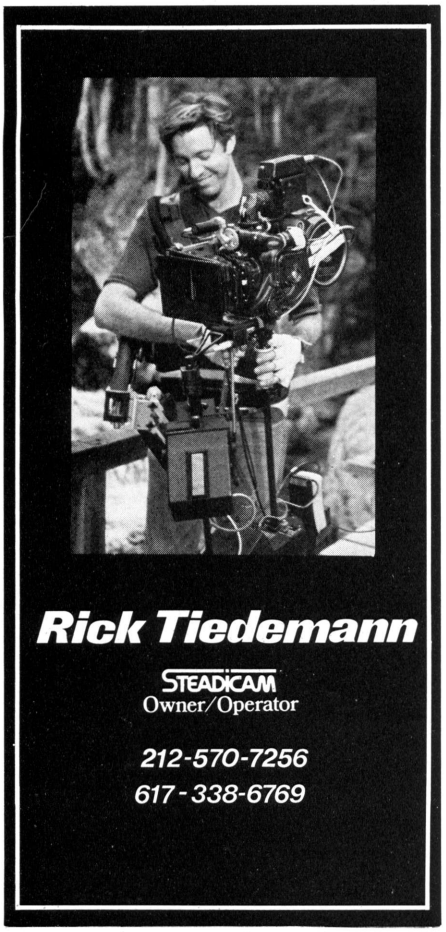

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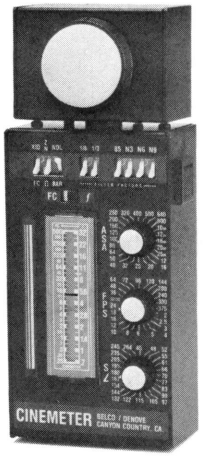

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Solid to speed up and slow down the background plate. The foreground was recorded as an isolated element directly to a Betacam BVW-40. The component signal from the Ultimatte was recorded onto a Sony BVW-40 recorder. This recording contained the composited matte.

Rock Solid began the component matting test hoping to evaluate both Panavision's Panacam and Ikegami's EC-35 camera.

The Panacam was dropped from the test after several unsuccessful attempts to adjust its timing to conform with the sync pulse of the rest of the system.

The Ikegami EC-35 performed flawlessly. The camera held up extremely well in the high temperature generated by the lights needed for the matting process. The camera control unit (CCU) was very flexible and afforded a great deal of control over all of the setup parameters. Rock Solid used the CCU to control gamma and detail, for example, when blending the matted elements. RGB was taken directly from the EC-35 and combined with the component video background plate to record a component video matte on Betacam. The key to taking an electronic matte back to film is to not introduce a composite video signal into the process.

Rock Solid has found that the direct transfer of film elements via an RGB matrix to component video is the best means of maintaining the film look on tape.

As to the component video-to-film process, Griffin states, "Certainly a 35mm print originating from Betacam is far superior to a film print transformed from 1" NTSC videotape, which requires the decoding of the composited chrominance and luminance information. Decoding results in a lack of apparent resoultion."

Rock Solid relates that action synchronization, the key to matting credibility, was more easily achieved when dealing with close-ups as there was less reference to the broader, overall action. It is more difficult to sync up the background and foreground elements when the background plate contains a lot of fast action or erratic motion. There seemed to be a more credible correlation between the background and foreground elements when the distant horizon line was not part of the shot.

Both focus and depth of field should be carefully considered when shooting the background plates. For part of the tests, the background was electronically thrown out of focus—which was not satisfactory to the team.

Fundamental to the credibility of the matte is where and how often the composited matte is intercut with a live-action sequence.

In setting up guidelines for the crew shooting the background plates, Rock Solid suggests the following:

Filming should be carefully choreographed. Random shots at awkward angles should be avoided. The crews would benefit from having detailed storyboards for those sections of the show that will contain the composite mattes. Working off a storyboard, for example, will alert the camera operator to push in at the end of a shot, thus enabling the editor to soften the transition between live action and the composite matte by cutting on a move.

Factors to consider when shooting the foreground include camera placement, camera angle, and lighting.

With the background angle fixed, it was critical that the orientation of the camera be such that the sight angles were uniform. The matte was most credible when the angles were not severe. Care must also be taken to orient the "raft" at the proper angle to the background.

The test was challenging because the lighting in the background plate was very flat. Although it's acceptable that on some days the lighting in the background plates will indeed be flat, when given the choice a plate with higher contrast lighting allows for more flexibility.

Further, "We all agreed that it was very important to include 'natural' elements as part of the foreground. The two most believeable mattes we achieved involved a high water sequence (in which both wind and water were part of the foreground filming; the water hitting the lens made the scene very real), and the close-up of the actor hanging on the rope from the hot air balloon (where strong wind gusts and sunlight were included)," states Griffin.

Multi-level matting is possible because component video signals suffer little degradation over three and four generations. For exmaple, this

would enable one to synchronize the background plate with both the live action foreground and a taped plate of a wave breaking in the foreground (over the bow of the raft).

It helps tremendously to know in detail the conditions under which the background plate was shot. Full charts should be shot at the heads of each section. They should include a full color chart, a gray scale, and a multiburst chart. Further, detailed notes containing information about lenses, filtration, film type, camera type, camera angle, etc. should accompany the footage.

Approximately 10 seconds of pre-roll filming assists with preview and playback lockup. Bypassing the camera black level setup during the the original recording and leaving it off until the transform, gives more flexibility when dealing with contrast range.

According to Griffin, the Ultimatte-5 performed superbly: "This was its maiden voyage. Vlahos, of Ultimatte, was very pleased with the performance and feels that continued experience will teach a great deal about the unit's potential."

To the extent that their test allowed, Rock Solid discovered that certain colors in the foreground matte better than others. While Vlahos originally speculated that a blue chroma key background would work better against the yellow raft, it turned out that a green chroma key background created a much cleaner edge.

There were approximately 300 footcandles of light for the chroma key. Vlahos seemed to think that half of that would more than suffice.

A green chroma key background reflects more light than a blue chroma key background. One must be careful to elminate as much colored bounce light as possible. Bounced chroma key light on the faces of actors, or as it reflects in water splashed onto a raft, has a tendency to key out—something to be avoided. Colored bounce light can be minimized by strategically placing white foam core at appropriate angles to eliminate the colored reflections.

The component matting process worked very well. It was done in real time and for less money than conventional film matting processes. The downside has to do with a slight loss of

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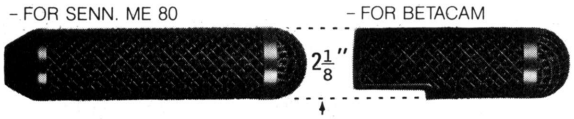

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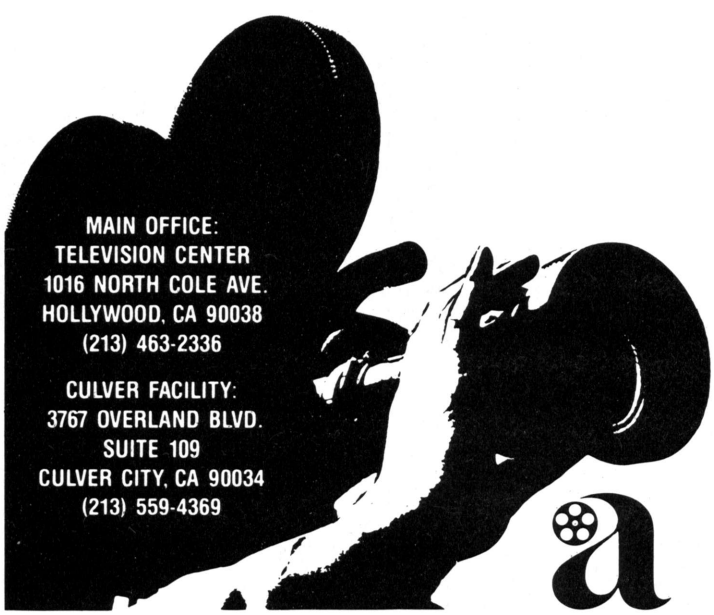

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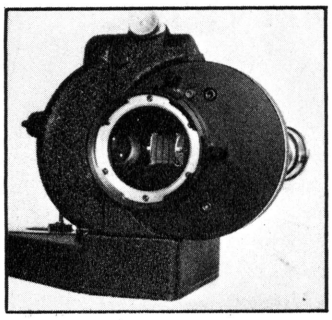

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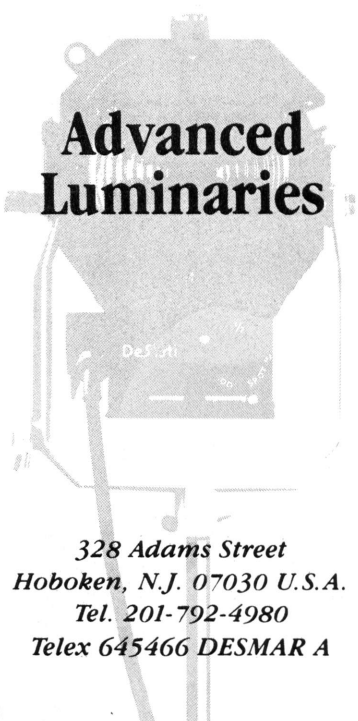

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quality and apparent resolution, and the inherent smearing of action images—all of which only take place when using the Imagevision process to transform the component videotape (recorded at 30 fps) to a 35mm film negative (running at 24 fps).

Griffin concludes: "Becaue we are speaking of shows whose primary, if not exclusive, distribution format is videotape, the most workable solution seems to be to shoot the majority of the show—including the background plates for the mattes—in 35mm film, and then transfer that film negative directly to component video for on-line editing, titling, opticals, special effects, and matting.

"Electronic post-production is significantly faster and more complete, flexible, and cost-effective than film editing. Tremendous advances have been made in non-linear, disk- and tape-based off-lining systems. Changes to a program can be made and seen minutes after viewing a rough cut (which can contain 90% of the programs opticals).

"Component video technology allows a great deal of flexibility when dealing with film elements and electronic matting. It also provides the most effective means of taking tape elements back to film for cutting into the film negative.

"We are focusing our efforts on developing an efficient and creative electronic post-production environment for movies of the week, series and episodic television."

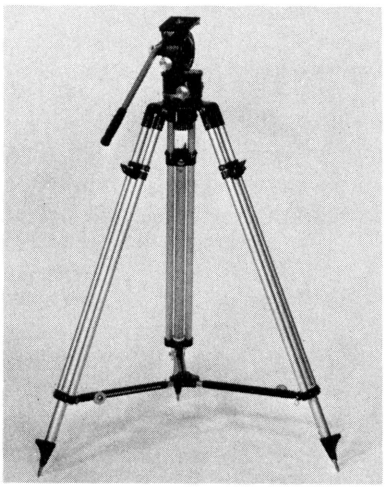
(Rock Solid Productions is located at 801 So. Main, Burbank, CA 91506)

Filter Kit

Tiffen Manufacturing Corp. has introduced a new special effect viewing filter kit.

The kit, supplied in a specially-designed wooden case, contains a viewing filter holder and 50 of the most popular Tiffen special effect filters. Its interior is lined with a fine textured foam and incorporates a soft velour material. On the inside of the top cover is an easy-to-read filter glossary, which can be used for quick reference. The kit was designed to give professional cinematographers and videographers immediate access to most of the special effect filters available. It permits the cameraman to conveniently view a scene through a filter and thereby determine what is most effective.

For further information, contact Tiffen Manufacturing, 90 Oser Ave., Hauppauge, NY 11788. (516) 273-2500.



Camera Support System

A new camera support system for video and motion picture professionals, featuring a lightweight tripod and true-fluid head, has been introduced by the Peter Lisand Corporation.

Offered in two models, the Ultra 250 weighing 11 lbs., and the Ultra 500 weighing 15 lbs., the system provides a tripod which maintains rigid stability at up to 18-pound capacity in the Ultra 250 and up to 25-pound capacity in the Ultra 500. Both models include a true-fluid head which provides smooth, regulated motion with single knob adjustment for drag and lock, pans 360° and tilts to a 90° vertical position.

The system offers a choice of tripod control handle positions, left, right or both. Reversible feet, either rubber-tipped for interior use or metal points for exterior assignments, are available with the Ultra 500. Quick re-

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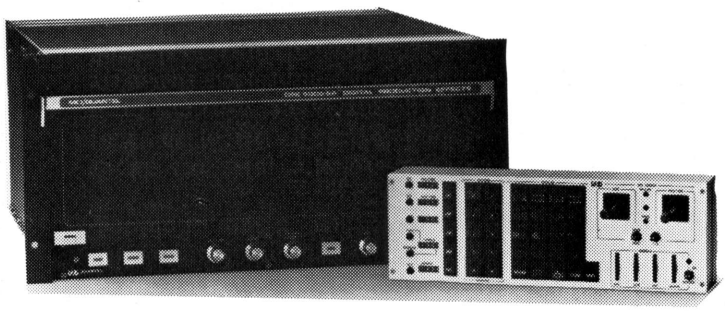

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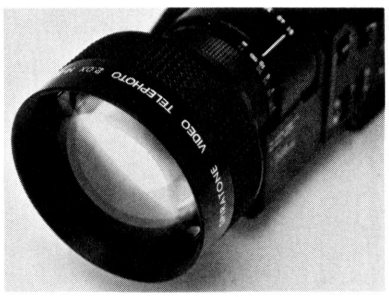
lease and strap are available with both models.

Overall closed height is 42 inches for the Ultra 250 and 44½ inches for the Ultra 500; both models extend to 60 inches. Head size of the Ultra 250 is 5" x 5¼"; the Ultra 500 head is 7½" x 5".

For further information contact Peter Lisand Machine Corp., 352 Edgewater Road, Edgewater, NJ 07020.



Video Telephoto Lens

A high resolution, 2X magnification telephoto attachment, which fits most any video camera zoom lens, has been announced by Spiratone, Inc., supplier of photographic and video accessories.

The highly-corrected, coated lens screws into the front of the video camera's lens, doubling the entire range of the lens to its maximum focal length: 40mm becomes 80mm, 72mm becomes 144mm and so on. And all focal length settings between the regular and extended maximum lengths become also available.

The Spiratone 2X high resolution video telephoto may be ordered by mail from Spiratone, Inc., 135-06 Northern Blvd., Flushing, N.Y. 11354.

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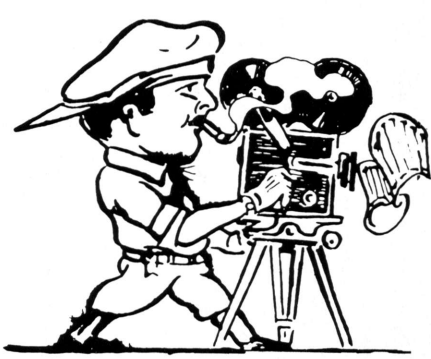

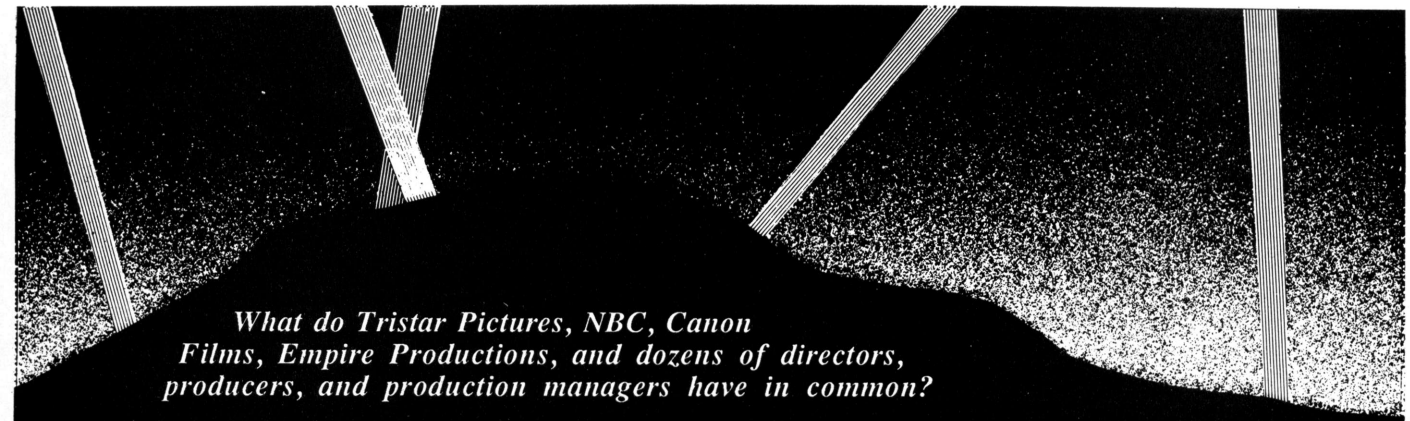

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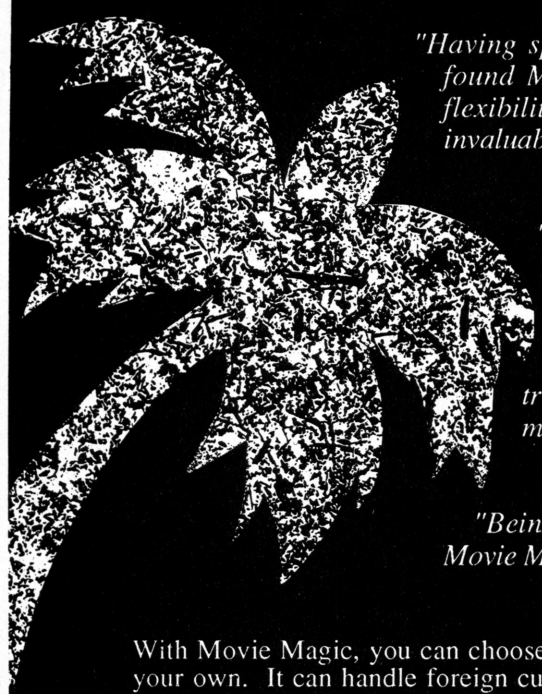

"Having spent years evaluating film production software, I found Movie Magic to be the finest on the market. The flexibility and simplicity of using the program makes it an invaluable tool for budgeting and accounting."
— Walter O'Neal, Tristar Pictures

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— David Hamburger
(Silverado, Let's Get Harry)

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With Movie Magic, you can choose from over a dozen pre-entered budget forms or you can create your own. It can handle foreign currencies, global recalculations, ratebook databasing, "What if?" queries, and has the most comprehensive fringe system available. Movie Magic even interfaces into several film accounting systems. Movie Magic runs on all IBM compatibles and costs only $595.00. Keep on the lookout for Movie Magic Budgeting on the Macintosh and the Movie Magic Scheduling & Breakdown programs, both coming this spring.

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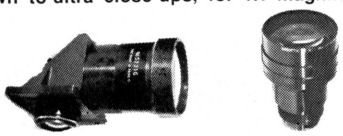

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The Bookshelf

by George L. George

The first two volumes of **The Motion Picture Guide,** a 12-volume encyclopedia covering all English-language films since 1927, have been published. The more than 6,000 movies, listed alphabetically in volumes A-B and C-D provide full cast-&-credits, plot summaries, production data, year of release, awards, ratings and cassette availability. The distinguishing feature of this masterful compilation, expertly edited by Jay Robert Nash and Stanley Ralph Ross, is in the lengthy sections on each film's social and historic significance, and its technical aspects (*CineBooks, Chicago, $75/s, $750/set*).

Over 1,000 reviews of sci-fi films which originally appeared in *Variety* from 1907 through 1984 are compiled in a serviceable reference book, **Variety's Complete Science Fiction Reviews.** Don Willis's knowledgeable preface traces the genre's evolution from the Lumière brothers' 1895 *Charcuterie Mécanique* to David Lynch's *Dune* (1984) (*Garland, NYC, $27.95/17.95*).

A comprehensive directory of the AV industry, **Audio-Visual Market Place 1985–86: A Multimedia Guide** covers in 4,500 cross-indexed entries the industry's manufacturers, producers and distributors, services, techniques and applications. A separate listing of 10,000 firms and individuals is provided (*Bowker, NYC, $49.95 + shipping*).

Douglas Gomery's informative and penetrating study, **The Hollywood Studio System** explores the economics of the California film industry during the 1930–1949 "Golden Age" era, when it dominated the U.S. entertainment business. The book discusses the industry's structure, conduct and performance, and emphasizes its practice of subordinating artistic considerations to the profit motive (*St. Martin's, NYC, $25*).

The 1986 edition of Peter Cowie's **International Film Guide,** now in its 23rd updated issue, covers, with its customary competence and reliability, production activities in 65 countries. Leading directors, noteworthy films, animation, archives, festivals, publications and schools are included (*NY Zoetrope, NYC, $12.95*).

The newly revised and updated edition of Mel London's **Getting Into Film** offers expert guidance to ambitious career seekers. Conceived by an active writer/director/producer, this clearly written and well-organized manual discusses with professional know-how both the creative and technical facets of every area of moviemaking (*Ballantine, NYC, $12.95*).

The work of three leading directors is analyzed in recent books: **Martin Scorsese and Michael Cimino** by Michael Bliss, and **Francis Ford Coppola** by Jean-Paul Chaillot and Elizabeth Vincent. While the latter is an engaging factual survey of Coppola's career, Bliss's study probes deeply into Scorsese's and Cimino's style and themes, and their cinematic links to film's classical tradition (*Scarecrow, Metuchen, NJ, $25; St. Martin's, NYC, $10.95*).

Insanity, depicted in numerous movies, is explored in a fully researched, fascinating book, **Images of Madness** by Michael Fleming and Roger Manvell. They discuss the genre in depth, relating madness to the clinical theories and practices of the period, and quoting psychiatrists as well as film critics (*Farleigh Dickinson U. Press, Cranbury, NJ, $49.50*).

Starting from Hitchcock's *Psycho,* William Schoell's appropriately titled **Stay Out of the Shower** covers 25 years of "shocker" movies. Its searching view of blood-and-gore films and their makers inventories this lurid genre with a sharp perception of its techniques as well as its social implications (*Dembner/Norton, NYC, $14.95*).

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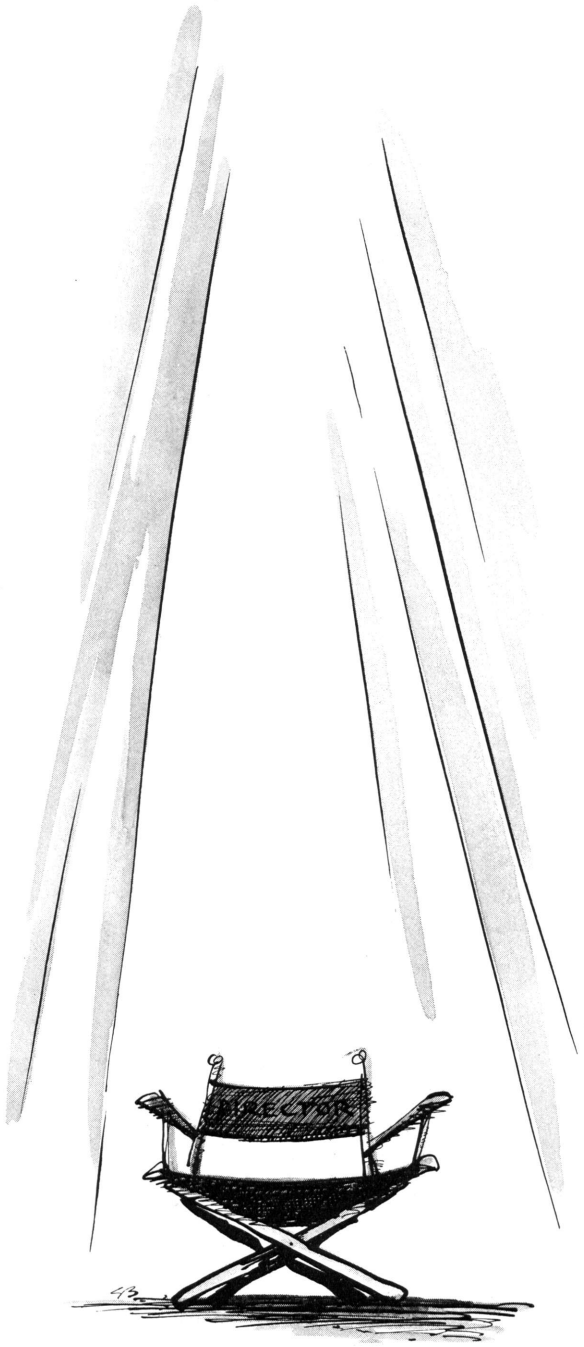

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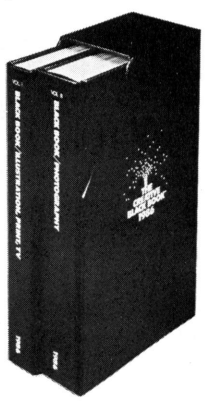

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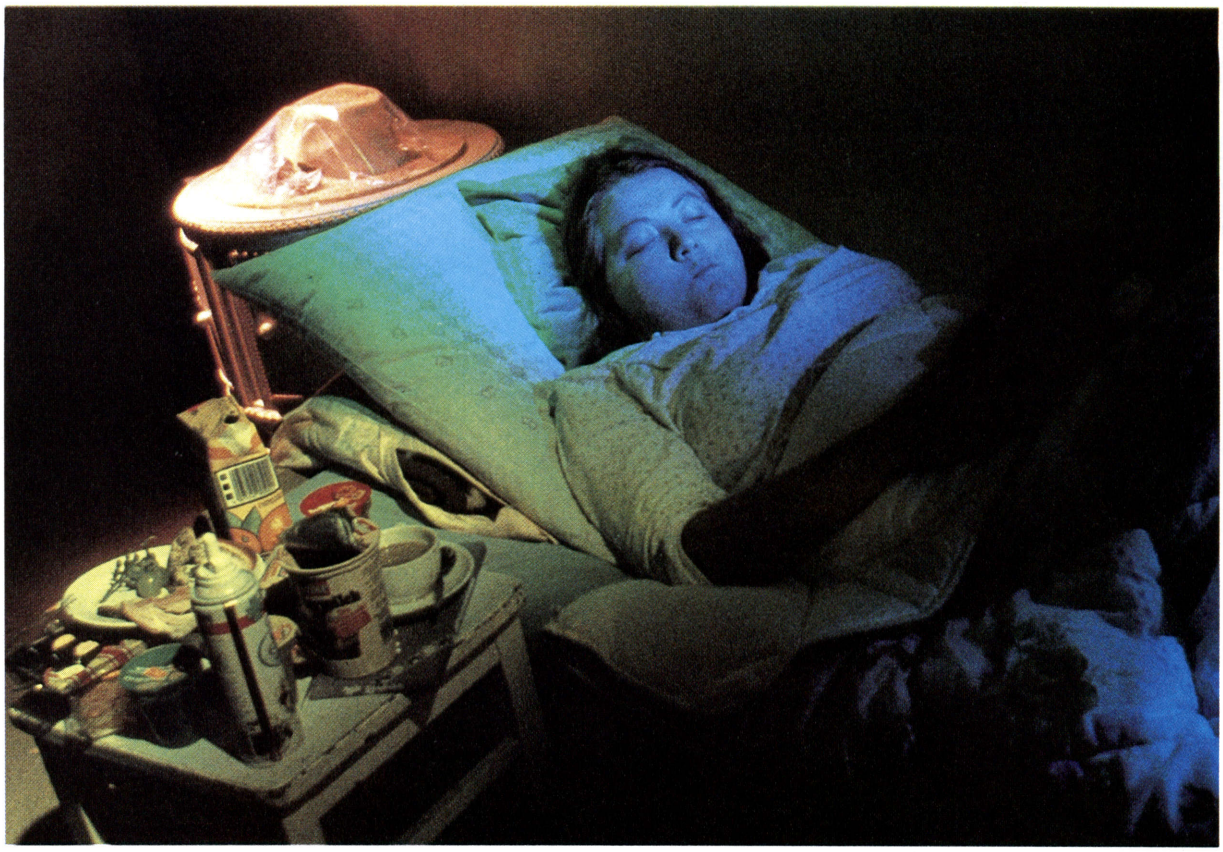


Sugarbaby – a Color-Drenched Story

by Joel Weinberg

"Colors connect with the unconscious; they unmask, bring the hidden to the surface. A main emphasis of my creative intentions is to transfer the 'story,' the film script, into a color drama – in other words, to clarify the story through colors. In doing so, I try to shape the colors in a close context with symbolic, psychological, poetic, and personal experiential values. Cinematography is painting with light."

These are the words of cinematographer Johanna Heer, whose movie, *Sugarbaby,* recently opened in major cities across the country. Heer, a New York City resident, traveled to West Germany at the invitation of director Percy Adlon (*Celeste*) to shoot his fourth feature film.

Sugarbaby, a light comedy with serious undertones, tells the bittersweet story of Marianne, an overweight Munich mortuary worker. Marianne leads a death-like existence herself until she falls in love with Heinz, a subway conductor she observes on her way to work. The movie chronicles Marianne's amusing efforts to track down and seduce her unsuspecting "sugarbaby." Adlon uses low-key, quirky humor and deeply drawn characterizations to illustrate the healing power of love.

The film's most striking attribute is Heer's dazzling, color-drenched photography, which at first seems unusual for a comedy. She gels and/or filters virtually every shot with a lurid rainbow of greens, yellows, pinks, and purples. She applies pools of color and shadow as if she were a painter working on a canvas. Heer's *tour de force* coloration recalls the bold color used by German expressionist painters and Fauvist artists like Matisse.

In general, Heer illuminates an interior with a predominant color, say purple. She will then direct a rosy pink light onto a table top and bounce the same pink shade off a mirror. Heer lights the actors' upper torsos with yet another color, perhaps a fiery orange tone, which also spreads out across the floor. To top it off, Heer projects an elaborate shadow

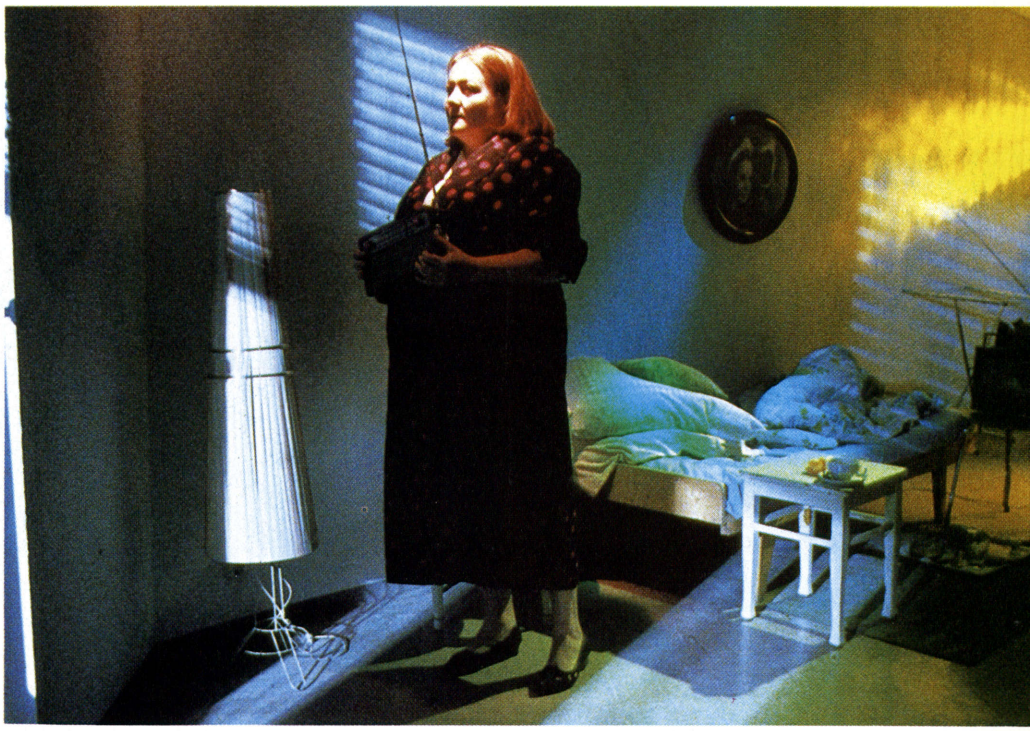
pattern coming from a window blind over the entire room. It's important to note that each shot in *Sugarbaby* is a totally new composition.

Heer's astonishing colors and dense shadows are not simply for effect, nor do they overpower a "small" movie like *Sugarbaby*. For the film, she devised an evolving color scheme and a system of camera movements which reflect the emotional progress of the story. Heer made her photographic technique a barometer of the action and an integral part of *Sugarbaby*'s narrative.

The first section of *Sugarbaby* is shot in cool greens and blues which personify Marianne's isolated, subterranean life in the subway and the funeral parlor. As Marianne gets closer to making contact with Heinz, the film moves to a warmer scale of reds, oranges, and magentas. By the time Heinz and Marianne are lovers taking a bubble bath, the screen radiates a hot pink aura which is the visual equivalent of a valentine.

Heer utilizes a similar progression with her camera movements. When Marianne is alone and looking for Heinz, she is locked into her environment with fixed camera set-ups. But from the moment she first speaks to Heinz, the camera begins to move. And starting with their first love scene, the camera also travels up and down. As this odd couple become more involved, the camera swings back and forth with them on a motorcycle ride and rocks out with them on a nightclub dance floor.

There is one scene in particular where Heer's moving camera stands out. Marianne and Heinz are having an intimate talk in bed when Marianne recounts the devastating effect her mother's death had on her. This monologue begins with the camera framing the lovers. Then as Marianne talks, the camera leaves them and explores her apartment in detail for the first time. What the roving camera shows us augments Marianne's speech and draws us farther into the couple's private world. This scene was shot in one 8-minute camera take which was carefully planned out in advance.



Johanna Heer's unique color photography didn't just spring up fully developed out of nowhere. Her work in *Sugarbaby* is the culmination, but not the end point, of a life-long obsession with light and color.

"It seems strange, but I watched lights when I was a child . . . Colors and light are interrelated and connected. I remember that I have always been fascinated with light."

Heer was born and grew up in Vienna and comes from a highly artistic family. Her father was a writer and historian, her mother teaches acting, and her brother is a painter. There are several other painters, actors, and opera singers in Heer's extended family. She knew from childhood that she wanted to work in films, and she told her friends that one day she would go to America to make movies. But even with the tremendous family push toward the arts and her early attraction to films, Heer underwent a long struggle to determine where she would focus her attention. She was a writer for awhile and then worked in still photography.

Photo by Josef Astor

Criss-cross diagonal lighting mirrors Marianne's inner torment as she ponders her life style.* Opposite page: *She spends her evenings eating and falling asleep in front of the television.* Below: *Johanna Heer.

In 1975, at age 23, Heer moved to New York to live in the center of the art world and be one step closer to Hollywood. With no formal film or art training, she began to work on independent movie productions. In 1977 she received U.S. immigrant status. And the following year Heer shot Gordon Stevenson's *Ecstatic Stigmatic*, her first director of photography credit.

In the late 70s Heer found herself a part of the East Village art scene working on a number of film projects that were never completed. In 1979 she collaborated with underground director Amos Poe (*Unmade Beds*,

Couple tango in once-bleak apartment transformed by cookalourus shadows. **Below:** ***Heinz entertains Marianne with acrobatic skills and movie ends with blue and red color themes as Marianne comes to grips with her life.***

Alphabet City) on *Subway Riders*, a bizarre Manhattan-based saga about a saxophone player who randomly murders people listening to his street corner concerts. Heer not only shot *Subway Riders*, she produced the movie and helped edit it.

Subway Riders was Heer's first film to employ a specific color for each character. It is also her first fully-realized fusion of photography and painting. The movie's premise is that its main characters exist in completely different worlds and never connect with each other even though they are neighbors. So all the scenes involving the sax murderer are shot in a luminous blue; the woman upstairs from him, a hooker, lives in vivid red surroundings; and the lady who tries to save him is bathed in a warm yellow light. Heer's flourescent colors amplify the separation between characters and contribute a visual sense of alienation to the movie.

After seeing *Subway Riders* at the 1981 Figueira da Foz Festival in Portugal, Hungarian director Gabor Body asked Heer to shoot his next film, *The Dog's Night Song* (1982). Heer, impressed by Body and other top Hungarian movie officials, accepted the job and became the first Western director of photography to work in Hungary. She is one of the few cinematographers to work in both the United States and Europe as well as in the Eastern and Western bloc countries.

Heer's photography for *The Dog's Night Song* took off in the opposite direction from *Subway Riders*. Although still working in painterly fashion, she chose to intertwine instead of isolating her character-based colors. Since the film's protagonists are linked together in a web of dependency, the color leitmotifs are also interconnected.

Heer shot *The Dog's Night Song* on three different stocks. She conveyed the objective world (80% of the movie) on 35mm, a child's subjective viewpoint on Super 8, and the realm

where personal lives enter the public arena on video. The Super 8 and video material were then transferred to 35mm. Heer was nominated for a best photography award at the 1983 Hungarian Film Week in Budapest for her work in this movie.

Back in West Germany in 1983 she photographed Muscha's *Decoder.* For this strange tale of a man who experiments with the mind-altering power of piped-in background music, she returned to her earlier use of isolated colors for each character. And in 1984 she was back in Germany doing her most refined work yet, employing both segregated and interwoven colors in *Sugarbaby.*

Never one to remain idle and always seeking to develop herself as an artist, Heer explores other mediums when she's not shooting movies. In the 70s, she made Super 8 structural studies of changing light patterns. More recently she has moved to video and produced three short tapes in collaboration with Werner Schmiedel, the soundman on *Decoder* and the assistant cameraman on *Sugarbaby.* These tapes, called *Gold 1 - The Dance, Gold 2 - The Dream,* and *Gold 3 - The Myth,* were inspired by the golden hues of Renaissance paintings. They are, in Heer's words, "very visually oriented tapes with a suggestion of narrative" which express "the desire for light."

Heer feels that all of her work is complementary. "What I learn from one installation I can bring into my next film, and vice versa." The variety of Heer's work has played a key role in her ongoing development of an "international cinematographic dramatic color language."

Heer believes that emotions are best portrayed through color (for example "green with envy") and that each person can be depicted through a certain color. Her desire to transfer a script into a "color drama" comes from her strongly-held conviction that colors are a primal human experience. According to Heer, colors trigger strong emotional responses in the unconscious mind and have been used as potent symbols in works ranging from Homer's *Odyssey* to 19th century novels.

Heer's way of determining the most meaningful color schemes and camera movements for a particular script is to immerse herself in the story. She works like an actress struggling to get inside her character, and in this sense she is a "method cinematographer."

"I'm really dedicating my entire life to it (the use of color and lighting). It sounds very dramatic, but it *is* very dramatic. I totally involve myself in the script. I'm like a part of the story. I live with the characters and I get to know them. I hope I will be able to continue to work in this way. I'm not using it as a special effect. It really has to come from the mind, the heart, and the stomach. It has to be a necessity for every frame to be that frame."

Not suprisingly, one of her first and perhaps strongest influences comes from painting. "I've gone all my life into galleries and museums, first in Vienna and then in Paris and London. I've always listened to painters talk and I've always seen paintings, a tremendous amount of paintings. It was a big influence in general, and it was also a conscious decision to try to bring painting into photography."

Heer's notion of the cinematographer-as-painter who uses light and color for pigments goes even further. Heer suggests that her highly stylized photography which eschews true light sources is closely related to modern art.

"For films, I think in terms of art, and art in the 20th century is not dealing with true light sources. I'm always amazed when I read about a cinematographer who says he uses true light sources because when you go to a museum and look at the Old Masters from the 17th century, they all used true light sources. That's fine with me, and I'm not saying anything discriminating against people who shoot that way. But I am saying that we *are* in the 20th century and there should be enough space,

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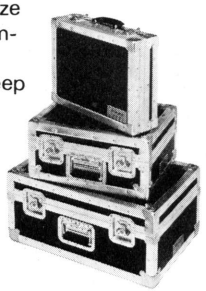

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and I think now finally there is enough space, to change this. The paintings done in this century are rarely concerned with true light sources."

Heer's photography in *Sugarbaby* is her most successful synthesis of style and content to date. This is largely due to the extensive collaboration that developed between director and cinematographer before and during the production.

Adlon and Heer originally met at the 1981 London Film Festival. Adlon was there with his first feature, *Celeste*, and Heer was there with *Subway Riders*. Although they didn't see each other's films, they did have a chance to talk. Adlon later told Heer that at their initial meeting he decided he wanted to work with her.

When Adlon phoned Heer and asked if she would like to shoot his next film, she was at first surprised. Heer suggested that perhaps her style might be inappropriate for Adlon's intentions, but he insisted that it was exactly what he wanted. Adlon said he was looking for a cameraperson with a contemporary, artistic approach, one who could help him break away from his previously conservative cinematography. When Heer read the script for *Sugarbaby*, she was immediately attracted to the project. She particularly liked the fact that Marianne is able to make a positive change in her life.

Once the storyboarding was done, Adlon left the color design entirely up to Heer. Heer asked him for color suggestions, but he felt that she was more experienced in this area. Adlon told Heer to plan the photography according to her own beliefs and visions.

As with *Subway Riders*, Heer wore more than one hat on *Sugarbaby*. Besides shooting the movie, she shares the art direction credit. She explains that most of *Sugarbaby*'s art direction was done through the photography. Additionally, Heer worked with Adlon in selecting locations. Adlon was concerned with the locations' narrative requirements while Heer considered their visual aspects. Heer also helped Adlon map out the interior specifications for Marianne's apartment, which was then built as a set.

The Adlon/Heer collaboration continued throughout the filming. Adlon trusted Heer's judgment to the extent that he left many on-the-set camera decisions up to her. This freed him to concentrate his attention on the actors.

Heer shot *Sugarbaby* on Fujicolor A8511 rated at 100 ASA. She had previously only worked with Kodak stock but was curious about Fujifilm. When Adlon suggested they use Fuji, Heer tentatively agreed. But first she made tests with both Kodak and Fuji stocks to determine the difference between the two.

"I know the differences. I know that Fuji is supposed to be harder. I know that Fuji is more difficult in the areas of underexposure.

"If you took a still photo outdoors, the differences between the two materials might be more apparent. But using strong lights and strong colors, you would be amazed. In the laboratory, the timer and myself watched the tests on parallel screens and we couldn't see the difference between the two stocks. But I was *trying* to get the same results. It doesn't mean they *are* identical. I really tried to shoot Fuji the same way I shot Kodak before."

Asking Heer to elaborate on her complicated lighting, gelling, and filtering procedures is slightly more problematic. Her response to whether she gels her lights, filters her lenses, or both, is: "It's all of it . . . that's just how I do it. It can't be explained very easily. There are so many elements and so many levels. I concentrate on so many levels at the same time."

When questioned about the techniques and equipment used to obtain her complex shadow, her reply is similarly broad: "It's really specific to the

scene. I've been using the same lights everyone else uses. And I've been using the same gels everyone else uses. I'm using normal, standard equipment. Standard Arri 35BL with a standard set of lenses (fast speed Zeiss lenses). Standard Fujifilm. Standard collection of lights from a rental house in Munich. They're not any different than the lights anybody else uses. It's only the way they are used. But that's really hard to describe."

For her cookalourus work, Heer doesn't rely on standard equipment. She constructs her own cookalouruses out of whatever material is available. Her shadow devices are custom-tailored to the particular effect she wants to achieve.

Speaking of her methods: "People I work with describe this very well. They say that I organize the patterns of light in a strange way where only I seem to really know the necessity of the arrangement. And everybody else thinks, 'What the hell is she doing?'

"And only when you see it in the laboratory does it make sense. But it doesn't seem to make a lot of sense while I'm doing it because the light doesn't look the same way it looks on film. Our eyes see things very differently from the way the film sees."

Although an observer might be inclined to regard Heer as a painter working with a palette of gels, Heer feels that most of her gel work is not mysterious. She does admit to having an enormous gel collection accumulated from all of her movies. But she considers her interest in gels to be routine. She says that all cinematographers select the gels they will need when beginning a film. It's standard procedure, like ordering paint.

Heer describes her lighting set-ups as a combination of advance planning and on-the-set spontaneity. Heer makes her color and lighting decisions long before coming onto the set through an extensive note-taking process. But she is always prepared for last minute alterations and improvements during shooting.

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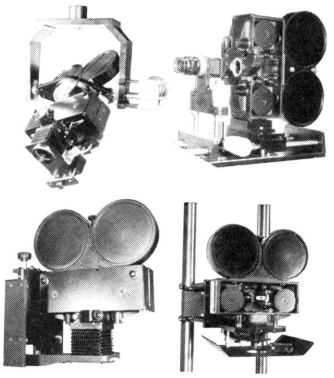

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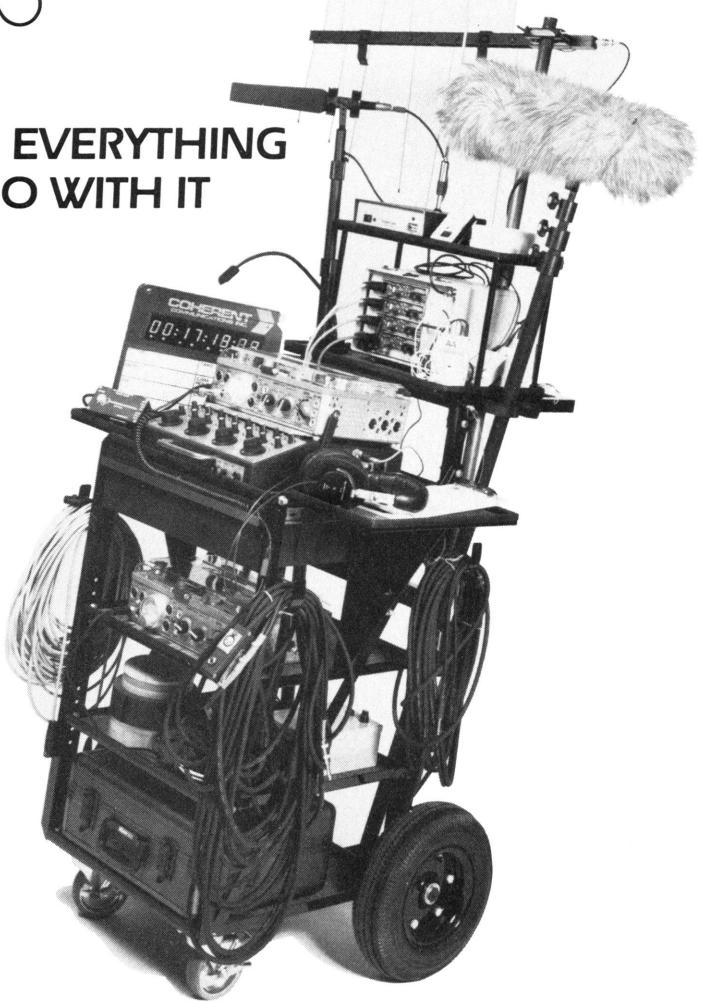

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Heer claims that her specialized lighting doesn't take any longer to set up than so-called "normal" lighting. She offers as proof the fact that *Sugarbaby* had a 26-day shooting schedule and it came in on time.

Heer does not favor one camera over another. She can implement her style using whatever camera is available. What Heer *is* fussy about are her exposures. Her all-important colors can be improperly rendered with an incorrect exposure. And on *Sugarbaby* she had to be extra careful not to underexpose the Fuji stock.

"I'm very obsessed with exposures. I try to work in a normal exposure range. But slight variations happen almost from shot to shot. And I have this thing that there is the 'right' exposure, so it's not just an even f.4 or .5 or .6 but something which is just a little bit under 5.6 or a little bit over 5.6. I always measure with two light meters – the incident light meter and the spot light meter. It's a combination of intuition and knowledge acquired through experience how the colors are going to read."

Heer laughs at the notion of having a difficult time as a woman director of photography. When asked whether she has experienced discrimination or had her abilities questioned because of her sex, she replies:

"Basically, no. Obviously there are very few women doing this. I was lucky that I had a father who brought me up to believe that women can do whatever they want to do. And it's true. Of course, everything in movies is difficult. And for men it's difficult too.

"Obviously there are a lot of directors who would not want to work with a female director of photography, but I just need one at a time." △

Joel Weinberg is the movie critic for the New York Native. *He also writes film-related articles for other publications.*

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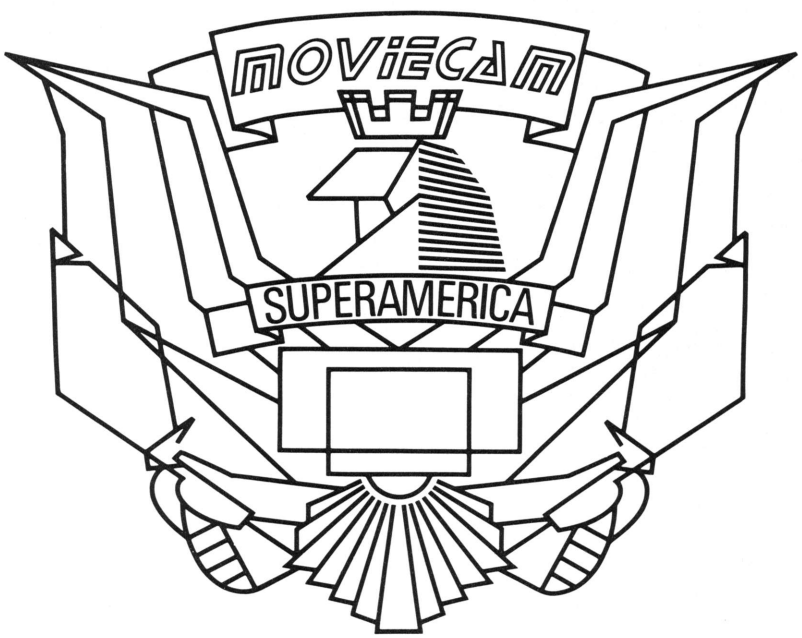

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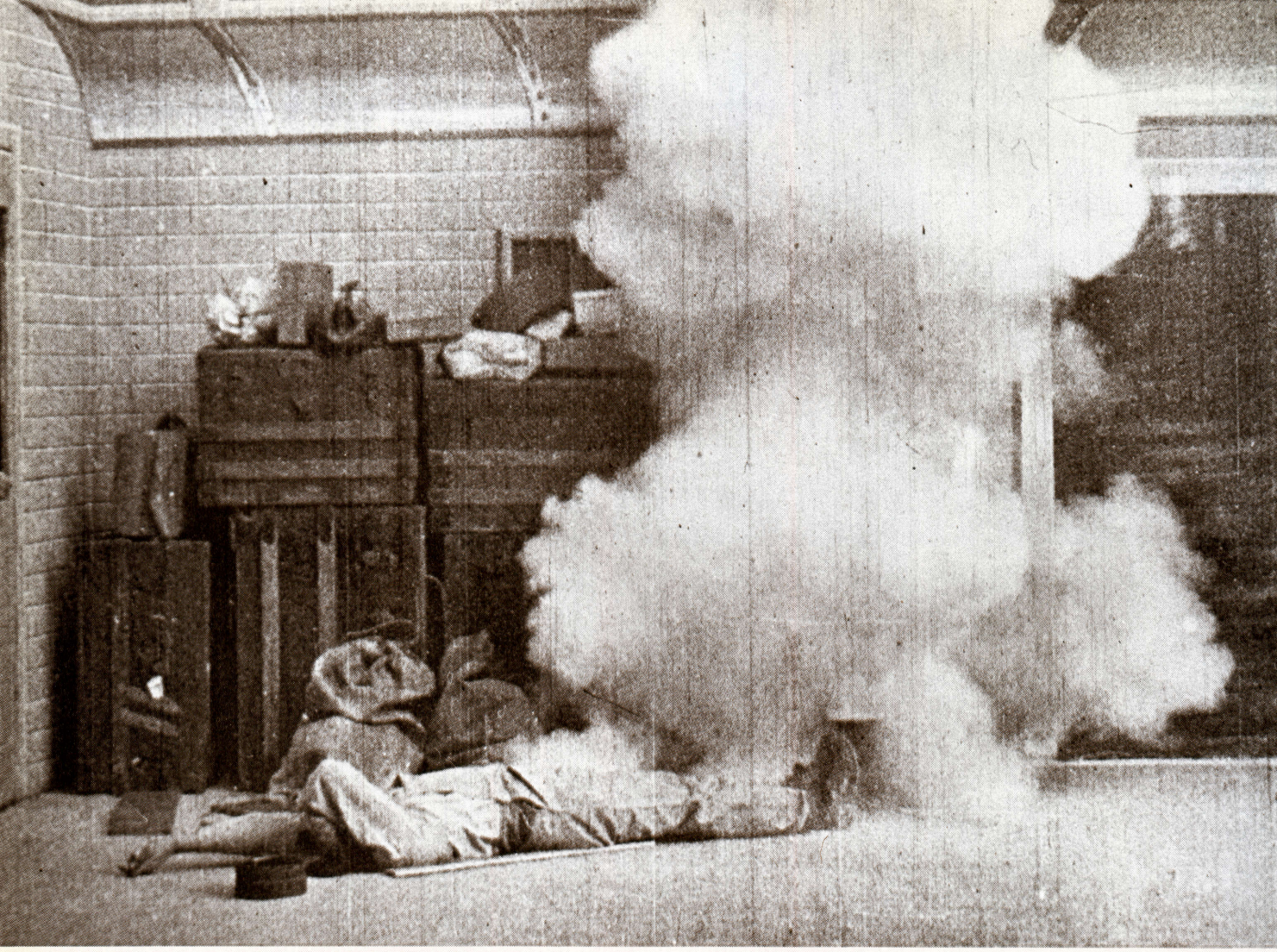

The Youngest Art is 90 Years Old

by Robert S. Birchard

IF YOU WALK along 34th Street west of Broadway in midtown Manhattan there is a bronze plaque near the entrance of Macy's department store commemorating the former site of Koster & Bial's Music Hall, where ninety years ago the movies made their New York debut on the night of April 23, 1896. The New York *Times* described the event:

When the hall was darkened last night a buzzing and roaring was heard in the turret, and an unusually bright light fell upon the screen. Then came into view two precious blonde young persons of the variety stage . . .

The first picture shown, stated the *Dramatic Mirror* of May 2, 1896, *was the Leigh Sisters in their umbrella dance. The effect was the same as if the girls were there on stage; all of their smiles and kicks and bows were seen. The second picture represented the breaking of the waves on the seashore. Wave after wave came tumbling on the sand, and as they struck, broke into tiny floods just like the real thing. Some of the people in the front rows seemed to be afraid they were going to get wet, and looked to see where they could run to, in case the waves came too close. The third picture showed a burlesque boxing match between Walton and Mayon, the*

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Page opposite: ***An explosion in the baggage car and an early matte background, highlights of an important 1903 production,*** **The Great Train Robbery. Left:** ***A typical storefront nickelodeon, circa 1913. This one was in Prescott, Arizona.***

long and short comedians. Then followed in quick succession a scene from A Milk White Flag, *in which a couple of dozen people appeared; a serpentine dance with all the colored calcium effects, and an amusing picture showing an argument between John Bull and Uncle Sam.*

Of course, as with many movie "firsts" the Koster & Bial's show was not actually the first exhibition of projected motion pictures. The Lumiere Brothers held their first Paris show at the Grand Café on December 28, 1895 – but in fact this "first" also had a precedent. Max Skladanowsky premiered the Bioscop at the Wintergarten in Berlin in November 1895. Still, the Berlin screening was not the first. On August 26, 1895 Major Woodville Latham presented his Eidoloscope at the Model Variety Theatre in Chicago, giving audiences a glimpse of "Living Motion Pictures, Life Size of Real Events." And as early as April 21, 1895 Latham had demonstrated his projector (which he at first labeled the Pantopticon) for a reporter from the New York *Sun*.

First to gain public attention, first in Paris, first in Europe, first in the United States, first anywhere – if the date varied to suit the needs of various inventors, showmen, and promoters one thing is indisputable: the movies have been with us for ninety years, give or take . . .

Ninety years! When Terry Ramsaye published his pioneering history of the movies, *A Million and One Nights*, in 1926 it was possible for him to write:

"For the first time in the history of the world, so far as the author has been able to discover, an art has sprouted, grown up and blossomed in so brief a time that one person might stand by and see it happen."

For everyone who has written about film since Ramsaye this has remained true. If the writer had not lived through the entire span of the movies it was still possible to obtain first hand interviews with those who had. Now we're approaching the moment when the beginnings of the movies will be beyond living memory.

No longer souvenirs of a recent past, films can bring a vanished time and place within the experience of those who were never there. Of course, books do the same thing, and paintings and photographs. But each generation filters the words on a printed page through its own sensibilities. Paintings are only a representation, perhaps realistic, perhaps fanciful. Photographs capture the moment but deny us the context. Only motion pictures, director Rouben Mamoulian reminds us, are "capable of eternalizing movement – " Through the movies we can capture movement and sound, dimension and time. "That's the great thing about the movies," Jimmy Stewart told Peter Bogdanovich. " – you're giving people little . . . little, tiny pieces of *time* . . . that they never forget."

"For the average adult today," wrote Iris Barry, founder of the Museum of Modern Art Film Library, "his past can most quickly be recaptured or recalled through the medium of old phonograph discs

Above: ***Al Christie (with raised hand) directs a scene at Nestor-Universal Studio, corner of Sunset and Gower—first studio in Hollywood. Anton Nagy cranks camera; Gilbert Warrenton (later ASC), standing at far right, is assistant cameraman. Circa 1912.*** **Below:** ***Plush Warner Hollywood Theatre in 1929 premiering Fanny Brice in her "Singing-Talking Vitaphone" debut,*** **My Man.**

and old films. But to hear the discs and see the films again is not to recall one's past; that is achieved better by pure recollections of past music and past movies. Actually to hear and see again what pleased one so much in music or photographic imagery is, rather, to get a sharp critical slant on one's own past. That was what one enjoyed ten years ago; this is what seemed the most exciting or beautiful thing in one's adolescence. *Cabiria* and *Male and Female* and 'I Must Have That Man' have not changed: it is we who have changed and the world we live in."

In a sense Iris Barry spoke for the first generation of filmgoers. Memories play tricks – the golden glow of nostalgia colors our perceptions and there is a longing for the "good old days." But through motion pictures and recordings those "pieces of time" were trapped like an insect in amber, and it was an unsettling experience. The past of the imagination met head on with the past of reality, and the past of the imagination was found wanting.

In the late 1950's when Elvis Presley and Rock & Roll were revolutionizing American entertainment the major studios released their pre-1948 sound films to television. With hula hoops and big-finned cars and pedal pushers all around, the clean lines of art moderne architecture and cars with running boards and bra-less women in form-clinging evening gowns seemed incredibly quaint and remote.

"How long after you started making pictures," Bogdanovich asked John Ford in 1966, "did you come to feel that what you were doing was something important?"

"Well, that's a presumption I can't accept," said the veteran director. "I've always enjoyed

Above: ***Ernest Haller, ASC, kneeling by the heavily blimped Mitchell camera, focuses on Douglas Fairbanks, Jr. and Sheila Terry in 1932 Warner Bros. production,*** **Scarlet Dawn. Below:** ***Three features for a dime—typical Main Street (Los Angeles) "grind house" in the late 1930s.***

making pictures – it's been my whole life . . . But I never thought about what I was doing in terms of art . . . to me, it was always a job of work . . ."

"You never thought about posterity?" Bogdanovich asked Allan Dwan in 1969.

"No," said Dwan, "never. Not at all. Never gave it a thought. Hardly ever thought about tomorrow."

These responses were fairly typical among filmmakers who began their careers in the movies' earliest years. Technology and time had conspired to denegrate the artistic triumphs of past decades, and it was often easier to feign a hard-nosed attitude than it was to explain their life's work to people who couldn't possibly understand.

Actually, the first filmmakers had great expectations for the medium – expectations that could only lead to their ultimate disillusionment.

"What is the future of the Kinetograph?" wrote W. K. L. and Antonia Dickson. [W. K. L. was prime mover in the invention of Edison's Kinetograph and also of the rival Biograph camera] ". . . It is the crown and flower of nineteenth century magic, the crystalization of eons of groping enchantments . . . It is the earnest coming of the age when the great potentialities of life shall no longer be in the keeping of cloister and college, or money bag, but shall overflow the nethermost portions of the earth at the command of the humblest heir of the Divine Intelligence."

D. W. Griffith told the readers of *The Mentor* in 1921 ". . . A picture is the universal symbol, and *a picture that moves* is a universal language . . . The cinema camera is the agent of Democracy. It levels barriers between races and classes.

Above: ***Love scene, 1913—Romaine Fielding romances Mary Ryan in Lubin Southwest Company production,*** **The Rattlesnake,** ***filmed in Las Vegas, N. M.***
Below: ***Love scene, 1923—Aileen Pringle and Conrad Nagel on the original bed of roses in the Goldwyn production of Elinor Glyn's steamy romance,*** **Three Weeks.**

"Visual demonstration is the most impressive means of teaching. Propagandists know this. Educators say that lessons learned with the aid of the moving picture are the least easily forgot. . ."

Sarah Bernhardt looked upon the movies as "my one chance for immortality."

Somehow that dream never quite came true. *The Big Parade, All Quiet on the Western Front, A Walk in the Sun,* and *M*A*S*H* have come and gone, yet men still study war. Movies and television have been blamed (rightly or wrongly) for a decline in academic performance, and although la Bernhardt's performance in *Queen Elizabeth* (1912) has come down to us on film, audiences today are more apt to laugh at her histrionics than to marvel at her artistry. Many of her fellow performers have fared even less well as thousands of films were destroyed or allowed to crumble to dust. If the influence of film appeared to be short-lived, changing technology only served to make earlier works seem to be something less than what they were.

By 1915 the "feature craze" had already relegated the one and two-reelers of the nickelodeon age to the category of museum pieces. Silence gave way to sound, black and white was replaced by color, screen ratios went from 1:33 to 2:35 to 1:85, and we may yet see film itself disappear as we adopt electronic imaging technology.

How could the movies possibly be important? Just "grind out another sausage." Who knows? It may be "Held Over By Popular Demand" but it "Positively Must End Tuesday!" It is easy to see how early enthusiasm led to premature despair over the nature of the medium. But something quite interesting happened, something that no one could possibly have predicted.

Consider the romantic movie of the moment – *Out of Africa.* A moviegoer in his twenties may just be old enough to remember when *Love Story* came out. *Pillow Talk* and *A Man and a Woman* are before his time. His parents were probably youngsters when *Casablanca* first hit theatre screens, and his grandparents were just starting to date when *Flesh and the Devil* was a current box office smash. His great grandparents may have attended one of those early demonstrations of "High Class Moving Pictures" and been enchanted by a brief glimpse of May Irwin and John C. Rice performing *The Kiss* from their stage success *The Widow Jones.* Each movie came and went in its time, and yet it is possible that the young moviegoer of today has seen all of these films.

The images of the past have become a part of the present. The Beatles in *A Hard Day's Night, The Adventures of Ozzie and Harriet, Gone With the Wind,* and *It Happened One Night* are familiar in the 1980's, and exist along side of Prince in *Purple Rain, Dallas, E.T. the Extra-Terrestrial,* and *Hannah and Her Sisters.* The recent past no longer seems remote – film, television, video cassettes and discs allow new generations to know the past in a way that has never been possible before.

The effect of this phenomenon is not easy to gauge. For the first television generation as earlier films of the past become accessible there was a sense of excitement. Critics began to tout the virtues of the past at a time (in the late 1960s and early 1970s) when the film art appeared to be on its last legs. Suddenly there was a "nostalgia craze" – cult audiences championed the pictures of W. C. Fields, Humphrey Bogart, and the Marx Brothers. The American Film Institute presented a series under the heading of "Rediscovering the American Cinema." Gradually there developed an appreciation of our movie heritage, and there was a stirring (if unfortunately belated) effort to preserve it.

At first glance, this passion for film does not seem to have been inherited by the second television generation, but perhaps that is because the zealousness of the first wave of "rediscoverers" can

Above: ***Love scene, 1940—Vivien Leigh momentarily forgets about the red earth of Tara with Clark Gable in*** **Gone With the Wind. Below:** ***Romantic image of the 1970s—Woody Allen and Diane Keaton in*** **Manhattan.**

never quite be duplicated. Where just a few years ago one could only hope that a treasured "must-see" would again see the light of screen, the audience today has unprecedented access to thousands of films and programs, and they are taking advantage of this opportunity. In 1912 the Edison Home Kinetoscope came on the market promising "the World in Pageant in Your Own Home." That promise has become reality.

We will never see William Shakespeare performing at the Globe theatre, we will never hear Patrick Henry deliver his compelling "Give me liberty, or give me death. . .", we can only experience the horrors and triumphs of the Battle of Waterloo through written accounts. But we do have *George Bernard Shaw Speaks for Movietone* (not to mention Sir Arthur Conan Doyle, Thomas Edison, Henry Ford, and Benito Mussolini). Franklin Roosevelt's first inaugural – "the only thing we have to fear, is fear itself. . ." is with us still, and World War II rages in all its fury on millions of feet of motion picture film.

The film pioneers expected too much. If movies and television did not bring about the millenium, did not put an end to war and intolerance, did not replace books as our primary source of knowledge, still their impact has been felt. Would we be as aware of other places and cultures if this "flower of nineteenth century magic" had never been invented?

Certainly the barriers between races and classes would be even higher without this "agent of Democracy," and would we be so reluctant to use nuclear weapons if we did not have film of the destruction of Hiroshima to check our folly?

"*Some day,*" the anonymous author of the Edison Home Kinetoscope sales brochure wrote, "*someone will write an appreciation of those adventurous spirits, the motion picture cameramen. They press closely upon the heels of events. Wherever world history is making – wherever world interest centers –*

Above: ***Preparing to photogaph an immortal image, Paramount crew with Gloria Swanson on set of*** **Sunset Boulevard,** ***1950. Director Billy Wilder and director of photography John Seitz, ASC, are off-scene.*** **Below:** ***Fourteen pictures at six bucks a pop. Multiplex is the order of the day in 1986, but not really so different from the store show of 1913.***

"Meanwhile, other men are producing motion picture dramas – dramatizations of the great classics – delicious comedies – side splitting farces – all in a way that cannot be duplicated on any theatre stage –

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(Robert Birchard is a frequent contributor to American Cinematographer. He is a devoted cineaste and historian.)

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Cinematography on the Wing

by William VanDerKloot

Robert Wussler, president of Turner Broadcasting's station, WTBS was looking for something different – not a Sunday morning nature show. It had to move quickly and be entertaining – a magazine format, perhaps. It was to herald the Audubon cause for preserving the quality of our environment with the same high standards that are evidenced in *Audubon* magazine, and it had to be done quickly on a cable budget.

Our production company, VanDerKloot Film & Television, had been producing documentaries since 1976. We welcomed the chance to create a new form of environmental television. Immediately, my partner, coproducer Michael Simpson, and I began to conceptualize this new show. We delved into books and articles on the environment and wrote out a rough treatment. Our partners, Mark Wagner and Toby Murphy also got involved.

We had to not only develop a shooting script and research and locate interview subjects, but we also had to develop the 'look' of the show – graphics, opening, title music, etc. We met with Wussler and National Audubon's vice-president of television, Christopher Palmer. Together we decided on a pilot episode that would include seven stories, each one about six to seven minutes in length. The program would showcase 'beautiful shots of wildlife' and feature concerned citizens as well as celebrities – a mix we used successfully in *Portrait of America: Georgia.*

We wanted the show to move both editorially and geographically. The stories ranged from the 3,500 bald eagles in the Chikat valley of Alaska to the last giant flock of pink flamingos on Great Inagua in the Bahamas. Our shooting script called for twelve different locations across the

The author with gear wades to catch the flamingos in their habitat. **Opposite page:** ***A great cloud as the birds fill the sky.***

country and the Bahamas – all in twenty-five consecutive days. Our challenge was to produce a network-quality program in a short time and with a less-than-network budget.

In the first week of January my two partners and I began the month-long shoot, during which time we would log over 20,000 miles. As with many of our productions we all wore several hats: Mark Wagner was sound recordist and production manager, Michael Simpson was writer, co-producer/director, and I was cinematographer, co-producer/director.

Throughout the production of the *World of Audubon* series we have encountered many unusual production situations (due as much to our truncated budget and schedule as to the rugged locations). The flamingo story is a perfect example of what we encountered. A story in a rugged and remote location – and a schedule that allows only four days of shooting.

The flamingo preserve is located on Great Inagua Island – the last major island in the chain. As one of the 'out islands,' it has two flights a week from Nassau. We planned to take the Tuesday plane in and the Sunday plane out.

"When civilization comes, the flamingos depart forever . . . This most marvelous of all avian sights shall remain the privilege of the few . . . who have the unquenchable thirst to witness the ultimate of loveliness."

– Gilbert Klingle

We lined up at a remote corner of Nassau airport for the flight to Great Inagua. Standing in line with us was a group of people that seemed straight from central casting – families returning to the salt mines, American surfers, uniformed government officials, and the three of us bearded filmmakers with (newly purchased) panama hats, cameras, and over 300 pounds of excess luggage at a cost of $1.50 per pound. All of Mark's cajoling with the BahamasAir agent couldn't reduce the cost.

We learned that BahamasAir used to be called Flamingo Air (as the Flamingo is the national bird of the Bahamas), but a slang expression grew to call it "Flame n' go Air," and that was deemed bad for business.

The light seemed to come from everywhere, as our twin-engined plane descended from the clouds and began its approach into Great Inagua Island. We were flying toward the Tropic of Cancer – half way around the world from Haines, Alaska. Everything seemed a blur. Only a few days ago we were running in front of an Alaskan blizzard en route to an interview with Richard Chamberlain in Santa Barbara. Now we were entering the Caribbean "out islands"; like the "off world" colonies in the film, *Blade Runner,* the destination sounded exotic.

We stepped out of the plane at Inagua International Airport (the sign was painted on a piece of plywood, with pictures of Flamingos). There was a young man in a uniform holding a submachine gun. Jimmy Nixon, the flamingo sanctuary warden, met us

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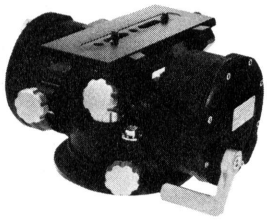

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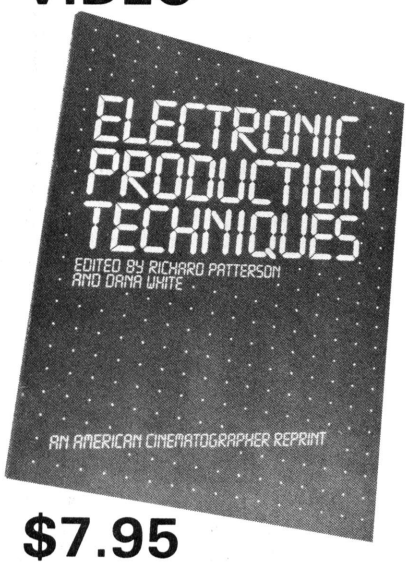

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at the baggage claim with his assistant, a young native man, Theodore Major. Jimmy moaned when he saw all of our equipment.

Jimmy informed us that the 23 mile trip to the Flamingo preserve would take over three hours to drive by jeep. He said, "Have to comp out, mon . . . have to comp." No drinking water, no electricity, no telephone. My first thought was about how to charge the camera batteries.

We were on an island of 700 people (with 100,000 flamingos) on the southern tip of the Bahamas. We learned that we would stay at Camp Vernay – a primative camp located in the preserve. We had two small jeeps for *everything* – five people, food for five days, and all equipment. Never had our 16 shipping cases seemed like so much overkill.

We came prepared with three cameras – our CP-16 (for sync filming), a Bolex RX-5 with an intervalometer (for time-lapse filming), and a Photo-sonics Actionmaster 500 (for slow motion). In addition to zoom lenses for each camera, we had numerous primes and Nikon telephotos.

We took only the most essential pieces of equipment and packed it into knapsacks and ditty bags. Our tool kit was reduced to a belt pouch, and our rigging kit and lights were left behind with the baby legs. The only fully packed box we took with us was the raw stock.

Jimmy took us to the general store to buy provisions – five days worth of "camp food," including his favorite, three cases of St. Pauli Girl. I noticed we had more beer than bottled water.

Past the outskirts of town, there is no trace of civilization and no marked roads to the preserve. I was amazed at how Jimmy found his way. To me it all looked the same – flat, white desert with large, shallow lakes – a perfect habitat for the West Indies flamingos. The white ground reflected an intense sun – ironically, the exposure situation was similar to the Alaskan winter we had just left. The azure blue sky is the constant here – in this case I pointed the sphere of the Spectra meter toward the sky (away from the ground) to get an accurate reading.

They say that the flamingos of Great Inagua are so rare that you need an appointment to see them. They are known to be skittish and extremely difficult to film. Finally we saw flamingos – perhaps 400. They're all bright orange – the color of roadway markers. I took the CP and instinctively flipped the battery to operational position. We drove to the flock and stopped the jeeps about 300 yards away. Everyone got out and walked toward the lake where they were feeding. We were like a small invasion force; Michael had the tripod, Mark the Nagra and Schoeps. I followed directly behind Jimmy with the camera. The soil is like damp, oozing chalk, and we sank to our ankles with every step.

I kept thinking that we should be sneaking up on the birds slowly (and quietly), but Jimmy was our guide, and he continued to march quickly forward. Suddenly the birds flushed. We were a good 200 yards away when we saw the sky fill with a reddish-orange cloud, as the flamingos flew toward the horizon. "Like blood in the sky," says Jimmy.

"Camp Varney" is a plywood hut with an open pit fire, located on a thin spit of land between two large lakes. Never more than two feet deep, these lakes stretch out beyond the Eastern and Western horizons – reflecting pools for the southern sky. The cumulus clouds are what the island people call 'mountains in the sky.'

Mark discovered a small Honda generator. We commandeered it to power our time-lapse camera and our battery chargers. In the evening we watched the symphony of the sky and its mirror image reflected on the water as we mentally prepared for tomorrow. We would leave before sunrise. There would be no story unless we came back with great flamingo footage – by Saturday morning.

We eased out of bed, drank Jimmy's coffee and set up the time-lapse camera. Michael and Theo remained at camp, while Mark and I headed out in search of flamingos – with Jimmy as our guide.

We walked for over an hour in the dark before dawn across miles of knee-deep water. There was something unnerving about this. Jimmy insisted on pulling a small boat full of our equipment.

Everything was reduced to two small knapsacks. One had "passive" items – raw stock, changing bag, air, tape, batteries, etc. The other had "active" items – loaded magazines, filters, lenses, etc. Both were covered with space blankets, silver side out, to insulate them from the intense heat. All the small items (lenses, tools, adapters, etc.) were packed in individual plastic bags to protect them from the water and salt. We had it planned so that Mark and I could carry all the necessary "active" equipment and still shoot – except for the boat, there was no place to put anything down.

The sun lit the distant horizon, about 6 a.m. and we spotted flamingos in the distance. Mark and I grabbed the equipment and walked *slowly* toward the nearest mangrove clump. We had learned to be very quiet and to stay out of sight. Seventy yards from the birds, we stopped behind some mangroves and set up the cameras – the CP on the sticks with a 500mm lens. There was a storm coming in and the sky provided the orange birds with a beautiful dark backdrop. We then inched our way, *ever so slowly*, around the trees and into line of sight. The sound of the Actionmaster alerted the birds, and they began their run into the wind to take off.

The footage was much better than the day before, but we needed more. We continued for the next five hours, but never got any closer to the birds. The midday sun forced the flamingos into the shelter of the trees, and we returned to camp for lunch – baked beans and cool beer.

In the afternoon, wading in the water again, I wondered how flamingos could hide so well. After two hours, we hadn't seen one bird. We stopped periodically to shoot scenes of herons, egrets, and other wading birds, but no flamingos.

The time-lapse camera clicked away at the sunset clouds. We cleaned all the camera equipment with alcohol – the salty chalk was everywhere. As we watched the incredible sunset, Jimmy told us that last month he had seen a flock of flamingos out in this very lake, with the sun setting right behind them. There are perhaps no more frustrating words in this line of work than, "You should have been here last month."

The next day Mark, Jimmy, and I walked for five hours in search of flamingos. None of Jimmy's "special places" had any birds. He felt bad about not being able to take us to the birds. We studied maps of the preserve as he said to us, "You'll see plenty of birds – I promise you, plenty of birds." We filmed an interview with Jimmy. For the first time since we arrived, he opened up and told us his feelings for the wild creatures he protects. We mentally went back over the past two days to see if there was anything new we could do to get closer to the birds. Mark and I planned to get up early the next day and search a different part of the island. To keep our profile as low as possible, we decided to go alone. We had less than two days to get the footage we needed. Our deadline approached like the evening clouds.

At 4 a.m. Friday we started again, no coffee. Mark and I walked along the land, staying close to the brush for cover. We spotted a flock in the distance, perhaps 300 birds. The wind was blowing from the right, so we began a slow rightward arc, staying close behind the mangroves and moving slowly. They have to fly

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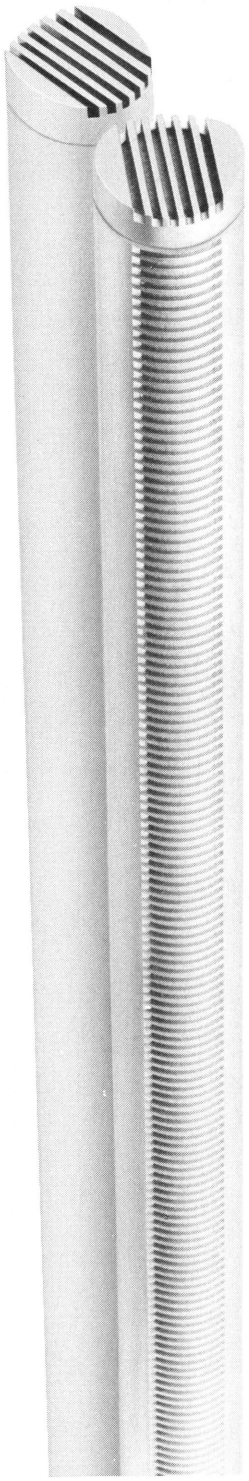

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into the wind to take off, so we ideally wanted to have the wind at our backs when they took flight.

It was like moving in slow motion, as we tried not to make any splash in the water. Morning broke as we came to the last mangrove clump less than 30 yards from the flock. They didn't seem to notice us. I walked towards them and started the Actionmaster. First one bird squawked, then another. Suddenly, as if on cue, they all took to the air – flying right to camera. The morning sunlight hit them as they got a few feet off the ground, making the tips of their feathers glow like fire. Jimmy's "blood in the sky" filled the frame.

A few dozen birds still remained nearby. I reloaded the camera and approached them – all the time with my eye in the viewfinder. At 20 yards away I triggered the camera. It wound to 200 fps – the sound of a dentist's drill gone berserk. The flamingos took to the air. I followed a young bird tightly as it ran with a loping stride and then lunged into the air. Mark got wonderful sound on the Nagra.

We walked back to camp, out of film, hungry but triumphant. I felt as if a horn section should herald our return. We now had the kind of footage we needed to make the story. Breakfast tasted better than ever.

At 11 a.m. a downpour hit. It came suddenly, without warning, and *hard*. Theo took refuge in the old red jeep and listened to a Cuban radio station. The rain went on for almost an hour. The skies let up, and we set up the Bolex to capture the clearing clouds. A few minutes later, I heard Mark yell. I ran outside to see a rainbow forming over the horizon in front of our time-lapse camera. It was our lucky day.

Michael and I headed toward the end of the island, in search of more flamingos. We travelled light – only the CP with long lenses and tripod. This was the 20th consecutive day on the road. We had travelled and/or filmed on every day, and the hectic pace was beginning to show. We shot a sequence of two Egrets fighting over a small fish.

Almost out of film, we headed back towards camp. Then as we focused our eyes toward the west, we saw a group of flamingos standing in the water with the setting sun behind them! We ran along the shore until the flamingos were silhouetted by the sun. As I lined up the shot, I saw the low footage indicator light in the viewfinder. Less than 30 feet left – and the sun was rapidly approaching the "perfect" position. This is the shot we'd been waiting for and we were almost out of film. I looked at Michael – not a word was exchanged as he ran back to camp (approximately a mile away).

The sun was "inches" from the horizon. I hesitated to shoot; I was trying to anticipate just the *right* moment to finish the last of our film. It didn't seem that Michael would ever get back in time. The sun dropped fast and the clouds reflected the orange light – a spectacular sunset. Time clicked loudly, like a music teacher's metronome.

I looked over and saw Michael running at full speed from the camp with a magazine under his arm – like the soldier in *Gallipoli*.

The camera was rolling. The great orange and red ball sat for a moment on the horizon line, as if purposefully hesitating, as three flamingos walked, in silhouette, into the frame. These are times when the medium transcends the mechanics, the arrangements, the business. At times like this it becomes magic.

Throughout the production of this program we have been constantly reminded of the one great common denominator that affects us all – our shared planet earth. We are privileged to be able to capture on film the wonders and beauty of the earth. We hope that *World of Audubon*, can in some small way, help to preserve this world so that future generations will be able to see more of our natural world than just images on a flickering screen. △

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Flying High With *Top Gun*

by Les Paul Robley

Jerry Bruckheimer, Don Simpson, producers
Directed by Tony Scott
Jeff Kimbell, director of photography

It is midday aboard aircraft carrier U.S.S. Enterprise. A pilot, dressed in full flight regalia with a helmet tucked under his arm, strides toward a silver, metallic eagle, cooking and shimmering in waves of rising heat. Like a knight preparing to mount his white steed, the pilot rechecks his gear and aircraft, securing his articles of war that are currently being used as implements for peace-keeping and military readiness. All about him hovers a ceaseless ear-splitting scream, an earth-shaking thunder as an adjacent F-14 Tomcat begins its ascent into the vast blue ocean of clouds and eternal wind. As the sound ebbs and the aircraft climbs 2,000 feet, all that's left is a trail of white fumes and two glowing pink after-burners, a fading memory of the depth of man's longing to soar like the eagles.

The pilot is a member of Top Gun, the Navy's prestigious Fighter Weapons School, training ground for the boldest, brightest and toughest naval air pilots in the world. He is of a different breed – competitive, courageous, totally committed to achieving excellence in his chosen career.

It is said that when a Top Gun pilot slips into the cockpit of an F-14 for his first flights, the U.S. Navy has already invested a million dollars in his training.

The objective of the Top Gun program is to identify the Navy's best pilots. Since its inception in 1968, the school grew directly out of the United States' experiences in Vietnam. During the first years of the war, the kill ratio was three enemy planes (MIGs) shot down for every one American plane destroyed. (During Korea, the average had been 17 to 1 and in World War II, 15 to 1.)

This unsettling news led to the Navy's 1968 recommendation that a fighter pilot training program be created. The program was dubbed "Top Gun," the name of an annual air-to-air gun competition held by various armed services in the 1940's and '50s.

The results of this intensive training in air combat maneuvering (ACM) were dramatic.

When Top Gun graduates returned to the second half of the Vietnam War, the Navy's kill ratio zoomed to 12 to 1.

In May of 1983, the latter half of one of Hollywood's hottest producing teams, Don Simpson and Jerry Bruckheimer, chanced upon an article in *California Magazine*. Entitled "Top Guns," it was a detailed look at the school and the quest for excellence in the pilots who attend it.

"Not only did we like the title and strong aerial photography, but we were attracted to this uncommon environment, with its own terminology and its bigger-than-life characters," says Bruckheimer. The two of them instantly saw a movie.

Upon optioning the story, Simpson and Bruckheimer hired writers Jim Cash and Jack Epps, Jr. to fashion a screenplay around the material. They had already sold the idea to Paramount by means of a simple few-line pitch, plus their mega-hit movie track record, led by *Flashdance* and *Beverly Hills Cop*. But before they could continue much further, they realized that without the cooperation of the Navy, *Top Gun* might never get off the ground.

Simpson, unfortunately, had had sour dealings previously with the Navy over the film, *An Officer and a Gentleman*. The Navy had considered the subject matter "profane" and "irreverent." So, anxious to set the record straight and show the positive aspects of naval training, he and Bruckheimer flew to Washington, D.C. and presented their proposal to top brass at the Pentagon.

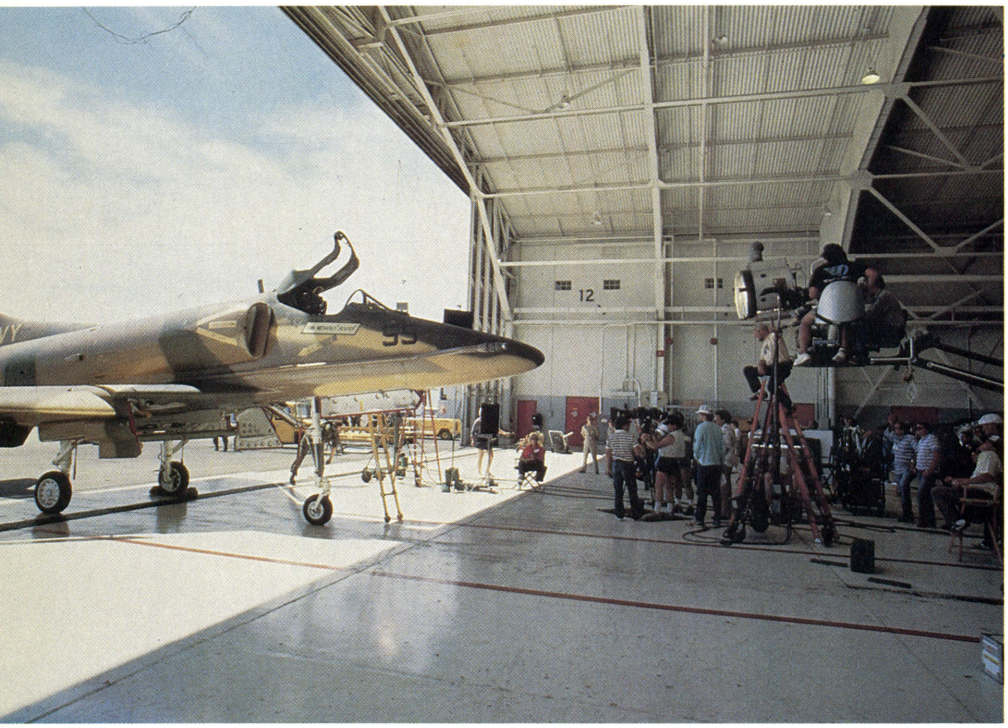
"It was obvious that we would need the full cooperation of the Navy in order to achieve the authenticity that was crucial to our story," recalled Simpson. "Not only was the Navy 100 percent receptive to our plans, but they suggested a technical adviser, a former Top Gun instructor, Capt. Pete Pettigrew, who lived in Southern California and eventually became a key member of our team."

An F-14 takes off. **Opposite page:** ***Fighter approaches carrier for landing.*** **Below:** ***Scott under umbrella gets a fix on the scene.***

The Navy's only condition was that the filmmakers be thoroughly accurate and portray the students' commitment to the military and its lifestyle. With that agreed, writer Jack Epps traveled to Naval Air Station Miramar, the largest master jet air station in the world. Covering nearly 24,000 acres in San Diego, NAS Miramar has all the characteristics of a self-sufficient city.

Epps attended declassified Top Gun classes, flew an "alpha strike" in the backseat of an F-14, and researched the attitudes of the young pilots who serve as students or instructors at the famous school. Unfortunately, the initial draft of the script was rejected by the Navy since too many "accidents" were depicted.

For a $13 million picture of this caliber, the "look" would obviously be very important to its success and appeal. The producers needed a director with a strong visual style in order to pull it off. They found their answer in Brit-



Above: ***Training class in hangar.***
Below: ***Pilots on flight line.***

ish-born TV commercial director Tony Scott (brother of visual master Ridley Scott). The two brothers were partners in a commercial production company and had won virtually every major award in the field.

The film stars Tom Cruise as Top Gun pilot Lt. Pete "Maverick" Mitchell, and Kelly McGillis from *Witness*. But the real "stars" may be the $36 million F-14 Tomcats, F-5 Tigers and A-4 Skyhawks which constitute the world of "yanking and banking" during *Top Gun's* dazzling aerial scenes. Unlike *The Right Stuff*, which relied to a great extent on miniatures, *Top Gun* shows audiences "the real thing," shot aboard aircraft carriers U.S.S. Ranger and U.S.S. Enterprise, at Naval Air Base Miramar, and inside moving F-14 and F-5 cockpits flown by actual Top Gun pilots. Only a few scenes are achieved via special effects.

Producer Jerry Bruckheimer chose cinematographer Jeff Kimbell to create this world, based on his slick second-unit photography for Bruckheimer's remake of *The Cat People*, and on commercials (where he had collaborated with Tony and Ridley Scott). Before *Top Gun*, Kimbell's previous film credit was *The Legend of Billie Jean*.

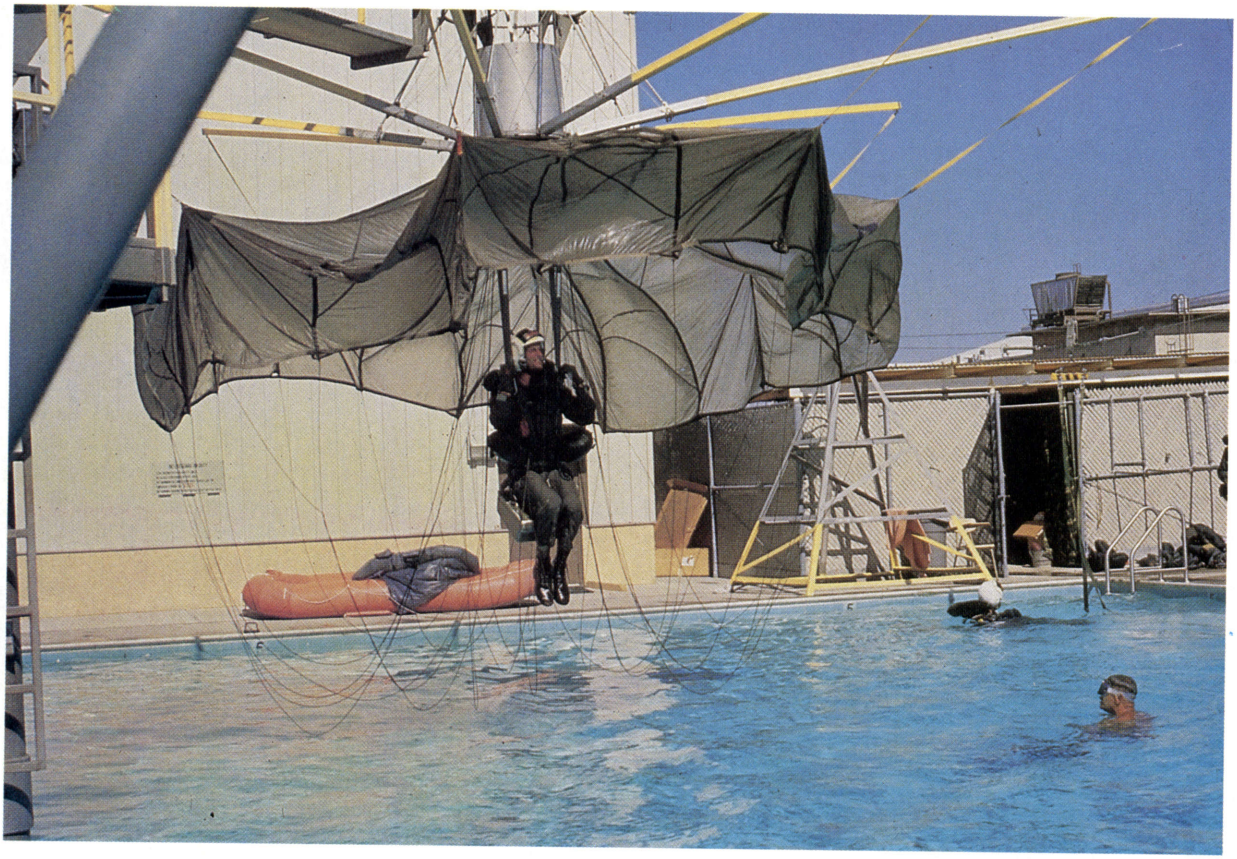
Reared in Dallas, Kimbell attended North Texas State University in Denton, where he studied radio and TV. He had always wanted to be a filmmaker ever since the 8mm shorts he made in high school.

Fresh out of college, he got a job working for Warner Brothers as a distribution trainee in 1965. But he still wasn't on the backlot. So, after six months, he quit to become apprentice to Bill Langley, a Hollywood commercial still photographer of the '30s and '40s. Langley was 75 at the time and needed someone to focus the camera, light his cigars and drive him around. Kimbell spent four years with the old mentor and learned so much about the subtleties of lighting that he credits Langley with giving him his first leg up in the industry.

In the late sixties, Kimbell worked on many low-budget AIP films. He also had a great deal of success with European directors, such as Ridley and Tony Scott.

"One night I was watching one of those old AIP films I had worked on," Kimbell recalled. "It was technically bad, but it was so early on in my career that I could see some very daring things which, of course, came out of ignorance, but were still so free and loose. That inspired me and I told myself I wanted that imaginative part back. I had the technical expertise to make it happen. That's when I really began to have fun with my craft.

"Essentially, what it boils down to is to try to do something visually that's a little out of the ordinary. To try to coax some texture and imagination out of the film, finding an impression that evokes an emotional response from the audience. If I can look at something and have it leave me with a feeling or impression, hope-



How to land in water using parachute.

fully it'll do that for the audience too."

Top Gun is a picture of high energy and high-tech hardware. Kimbell and Scott first approached the photography by spending a great deal of time looking at two earlier pictures of similar subject matter: *The Right Stuff* and *The Final Countdown.*

"Tony and I had experimented on commercials using colored graduates and other things considered unusual a few years back – things we take for granted today, such as altered skies and different perceptions of reality. Back then we always tried to press the limits to do something new. We pooled all the glass and filters we'd collected over the years and tried to design a different look."

Filming commmenced on June 26, 1985 in Oceanside, California, later moving to Miramar for several weeks to begin the scenes which involved an impressive line-up of F-14 Tomcats, F-5 Tigers and A-4 Skyhawks. Flight suits and helmets were designed to maximize visual appeal and plans were made to customize the aircraft.

Here the filmmakers sought to portray a feeling as in a medieval drama – like knights in shining armor. They decided to shoot slightly off-speed (about 28 frames-per-second) to achieve the altered, weighty perception of reality experienced on deck. They even shot dialogue at 28 fps.

"There's a bizarre feeling of unreality when you're there," remembered Kimbell. "Your senses become muffled. You get off the jet and you have your helmet on, your inflatable flight jacket, your eyes and ears are covered by goggles and ear muffs, and there's a tireless 30 knot wind whipping across the deck. Less than 100 yards away, 50,000 pound jets slam every 10 seconds onto a football field length of black and white parking lot doing 180 mph. A ceaseless, pounding sound . . .

"I couldn't help but attempt to convey that feeling some way in the film. The roar of the F-14 is awesome, deafening. The only way we could communicate was through different kinds of sign language. Your life depends on these signals. In a real sense it's a life-threatening situation on these carriers and the Navy's really good at it. They spend their time launching and recovering planes all night long. If war started tomorrow, it wouldn't really change their day that much."

Into this well-ordered chaos came the group of Hollywood neophytes. The crew attended briefings about daily working procedures. Few were able to sleep amid the ear-shattering noise, and many spent their time on deck simply watching the take-offs and landings. Because the ship operated on round-the-clock shifts, there was really no sense of day or night, a disorienting factor for everyone involved. Actor Rick Rossovich became so lost one evening by the maze of hallways that he finally gave up, catching a few hours' shut eye on a mattress left in an empty hall.

The carrier proved to be no ordinary shooting location by

Fisheye view of camera crew over water.* Below: *Cruise in water.

any means. Temperatures on the flight line sometimes reached a boiling 110 degrees, and the thundering jet noise frequently halted filming. Scott recalled; "That noise could really scramble your brains. It was sometimes hard for an actor to remember his lines with the roar of an F-14's after-burners behind him."

How did soundman Bill Kaplan, deal with the incessant noise? "We turned him loose and shot mostly wild," answered Kimbell. "We had some quiet window periods when they were cleaning the deck at sunup. There wasn't much air traffic for a few hours so we'd be out there bright and early shooting the dialog during those holes of quiet. But the continuous ambience will be what makes our film appear more realistic."

The company encountered several other obstacles, not the least of which was the "schlupping" of heavy film equipment up and down 12 flights of narrow stairwells. Kimbell told an amusing story about how the crew often borrowed a small private elevator that the top brass and VIPs used to get from one deck to another. One day an admiral came on board, and when he opened the door to his elevator, found it loaded with movie lights, tape and three grim-faced grips. "He had to walk up the 12 flights to the deck and was pretty hot by the time he got to the top," laughed Kimbell. "So, that ended our elevator use.

"Everything presented its own challenge. Inside the aircraft carrier there are many two-foot fluorescents. We did our best to make these look authentic."

Scott and Kimbell met each evening with the ship's navigator to plan the sun time for the following day's shoot. Explained Kimbell: "Every set-up was based on the real available light level. We brought the light in from the outside using arcs. Inside we used Duarcs for fills. The texture of these arc lights is very much like a daylight feel. We chased that available look every step of the way. No incandescence was used save for the later process stage work."

Next came one of the most difficult scenes in the movie. When Maverick and Iceman (Val Kilmer) are in the air competing, Maverick's jet gets caught in the turbulence of Ice's plane and goes into a spin over the ocean. He and his radar intercept officer, Lt. Goose Bradshaw (Anthony Edwards), must eject into the choppy sea.

Tom Cruise and Tony Edwards had to spend two rigorous days in chilling ocean water to film the air-sea rescue. "We encountered all the usual problems that you'd have working in the ocean with the boat going one way, the helicopter going another and the actors in freezing water," said Kimbell. "At one point Cruise got tangled up in his parachute strings (he did his own stuntwork here) so the scuba divers had to fish him out. There are a lot of dangerous elements in this film and everyone had to rely on quick reflexes."

Kimbell used Panavision equipment to shoot the ground and boat action. There weren't many back-up cameras employed – just the A and B cameras. Steadicam was used for scenes of the pilots running toward their planes. Joe Valentine contributed to the superb long lens work on the carrier deck. At the end of a

day's shooting, first assistant Kenny Nashino had to do major clean-up jobs on the equipment, what with all the salt in the air. Shooting on the carrier was often a touch-and-go situation due to the inability at times to get the aircraft free for filming.

Choreographed by Scott, aerial coordinator Dick Stevens and Top Gun commander Bob Willard, the extremely complex dogfighting maneuvers were flown by actual Top Gun instructors and pilots based at Miramar.

Pilot Clay Lacy employed his Astrovision process to film these sequences. The process involved his Lear jet, rigged with a kind of snorkel camera system, which enabled him to fly alongside and film another plane. An Arri-3 was mounted to a periscope that protruded through the top and bottom of the jet. (Continental Camera placed Astrovision in Lacy's Lear.) David Knoll was operator for Astrovision and Greg Schmidt was aerial assistant for half the picture. John Connors and Jim Connell were operators for the ground story filming.

Dick Stevens served as technical engineer and liaison with Grumman Aerospace (builders of the F-14) and the military for the mounted cameras inside the cockpits.

"We used cameramen from the Air Force to shoot from the back seat, but 90 percent of it was shot by Lacy using the Astrovision System," admitted Stevens. "Manager Bill Badalato and Tony Scott hired us because of our experience with the military in photographing contemporary high-powered jets. They simply told us: 'Your job is . . . get the damn planes on the screen.' So we worked closely with Lacy to schedule his entry during the filming, and pretty much put together the entire systems selecting package."

Special instrument "military" cameras from Photosonics (now called The Instrument Marketing Group) were selected over Panavision due to the restricted space within the cockpits. Six

Pilot actors on flight apron.

other cameras were mounted externally and operated by the pilot. Since normal camera mounts were not engineered to take the kind of stress found in an F-14, Stevens and associate Tom Harman had to design modifications to the interiors of the aircraft. These designs were then okayed by the aircraft manufacturer and the Navy to be sure they passed engineering and safety specifications.

"We killed ourselves to obtain Navy clearance," he added. "Anytime you touch a military aircraft you must have the Navy approve structural analysis. They're not going to let Hollywood come in and do a jerry-rigged job."

The F-14 Tomcat is the U.S. Navy's supreme fighting machine. Costing $36 million, it can climb 30,000 feet in one minute, fly faster than Mach 2 and haul seven tons of weaponry. Safety was vital to Paramount Studios, since they could go belly up if one of these planes went belly under.

"First we interfaced with Grumman to review systems they had built for *The Final Countdown,*" said Stevens. "These included six external mounts on the F-14 with a camera pod housing. In addition to the existing positions they had created for their own operational analysis and for *Final Countdown,* we collaborated with them to design mount positions in the cockpit for two 35mm cameras."

He and Harman equipped cameras in both the front pilot's cockpit and the rear RIO's position. Both cameras were mounted facing aft, aimed at the pilots. Each set of mounts went exclusively with that aircraft for the entire shoot. Each was modified and completely rewired by Grumman. They installed discreet circuits for the camera mounts throughout the aircraft, internally and externally.

The cameras employed 200-foot magazines with 18mm, 35mm and even 50mm Nikon lenses. This was the smallest condensed package that the F-14 interiors could accommodate. The two-minute film loads meant the pilot only had one pop at a time. The camera angles and f-stops were all predetermined and set by Stevens, Scott and Kimbell. This was the first time 35mm had flown inside an F-14. The military is still keen on using 16mm.

Four camera stations were mounted externally: one on the left wing pylon or bomb rack, one in the marcelle position attached to the fuselage on the underbelly, one on the right wing faring position at the top dorsal, and one above the wing just behind the cockpit. Each camera could look forward or aft on the mount. The trigger switch was operated by the pilot from the cockpit position.

Cruise and Clarence Gillyard, jr.

According to Stevens, two internal cockpit cameras and one selected external mount were the most that could be triggered electronically. Once airborne there was no ability to track. The camera angle was restricted to a preselected position, focused on a different angle of the pilot. This was later reset for each new mission. The pre-determined f-stop was tricky to calculate, especially when the aircraft changed position in the sky relative to the sun.

"The dogfights were all carefully choreographed to tell the story," said Kimbell. "We'd have a briefing with the Top Gun pilots and go over the various maneuvers. They'd put them on a card and then go out and perform them for one-and-a-half hours, until they ran out of gas."

The film company had decided to shoot the film in the Super 35mm format. This is a 2:35 to 1 aspect ratio which incorporates flat, spherical lenses, using the full (silent) aperture including the soundtrack area outside academy aperture. It is fast becoming more and more popular among the film community as an alternative to using anamorphic lenses. The extra .112 inches provides a larger copy ratio with more film information space when making release prints. This technique is employed often in process work when shooting background plates.

The reasons for not using anamorphic on *Top Gun* were many. The most important had to do with the tremendous physical stress which the cameras and lens systems underwent when mounted to an F-14. There are approximately six gs of pressure when the aircraft banks a corner.

"We thought of going anamorphic on the picture because Tony insisted on the 2:35 wide screen look, since it better accommodated the window configurations seen from inside most cockpits," Kimbell recalled. "But then we would have had to start mixing the formats up heavily. The stresses in the aircraft and the added weight and mass of anamorphic equipment create more inertia. A five-pound lens begins to weigh 100 pounds when turning a corner."

Shooting with spherical lenses meant not having to deal with an extra piece of anamorphic glass, extreme nodal point shifts, or focusing problems. Spherical lenses are sharper with better depth of field and less light loss. But Kimbell was quick to point out that spherical does not necessarily mean better or worse.

"Rather, it's different," he indicated. "It's almost as if the quality of the lens gives a different feeling of presence. A spherical lens certainly has different aspects than an anamorphic. It alters your style, depending on what equipment you're working with, just as a Canon does against a Nikon or a Panavision.

"The anamorphic lens will press you to light or tailor the way you set up your shot. The same goes for Super 35. It's a different animal. You compose for it differently, even though the aspect ratios are the same. Shooting it offers different problems in composition and mood. The difference in f-stop or depth of field gives you varied impressions of how you'd approach it."

Kimbell protected for TV by composing for 1.66 as well. Each of the Panavision and Arriflex lens mounts had to be optically centered for full aperture by changing the mounting plate on the camera's front. The instrument cameras on the F-14s were already equipped with a full aperture-centered lens axis.

The Panavision system utilizes a common top line, extracting the picture from the top down. Therefore, headroom always stays the same for 70mm, 35mm, and even TV. Kimbell wanted to avoid using a common top line because of all the different camera systems employed on the shoot. He elected to extract the 2.35 picture frame from the center 2 perfs off the normal 4-perf pull down.

When the release prints were made Kimbell wanted to resilver the film. He pointed out that another film photographed in Super 35 and resilvered was *Silverado* (no pun intended). MGM Labs calls their process "upper scale enhancement."

According to Kimbell, the lab runs the film back through a D-76 developer which enriches the blacks.

Obviously, release prints in Super 35 are grainier than normal anamorphic prints. This is because the center 2-perf portion of the original negative is the only part used. "I was concerned about grain which is why we wanted to resilver the film," said Kimbell. "We did a lot of testing before we used it. It costs extra to resilver these prints, but I feel it's extremely important to do it because in the blow-up we'll pick up extra grain due to the diminished negative size. And to view this film in 2:35 is so much more dramatic than 1:85."

Kimbell selected two film stocks: 5247 and 5394. "I love 47 because it has finer grain and more contrast," he continued. Kimbell rated the 47 at 125 EI and the 94 at 360 EI. "The 94 has a look all its own," he said, "perfect for the gritty feeling we wanted. It's very helpful in low light level conditions. I'm not sure everyone will like it. It's got a little broader

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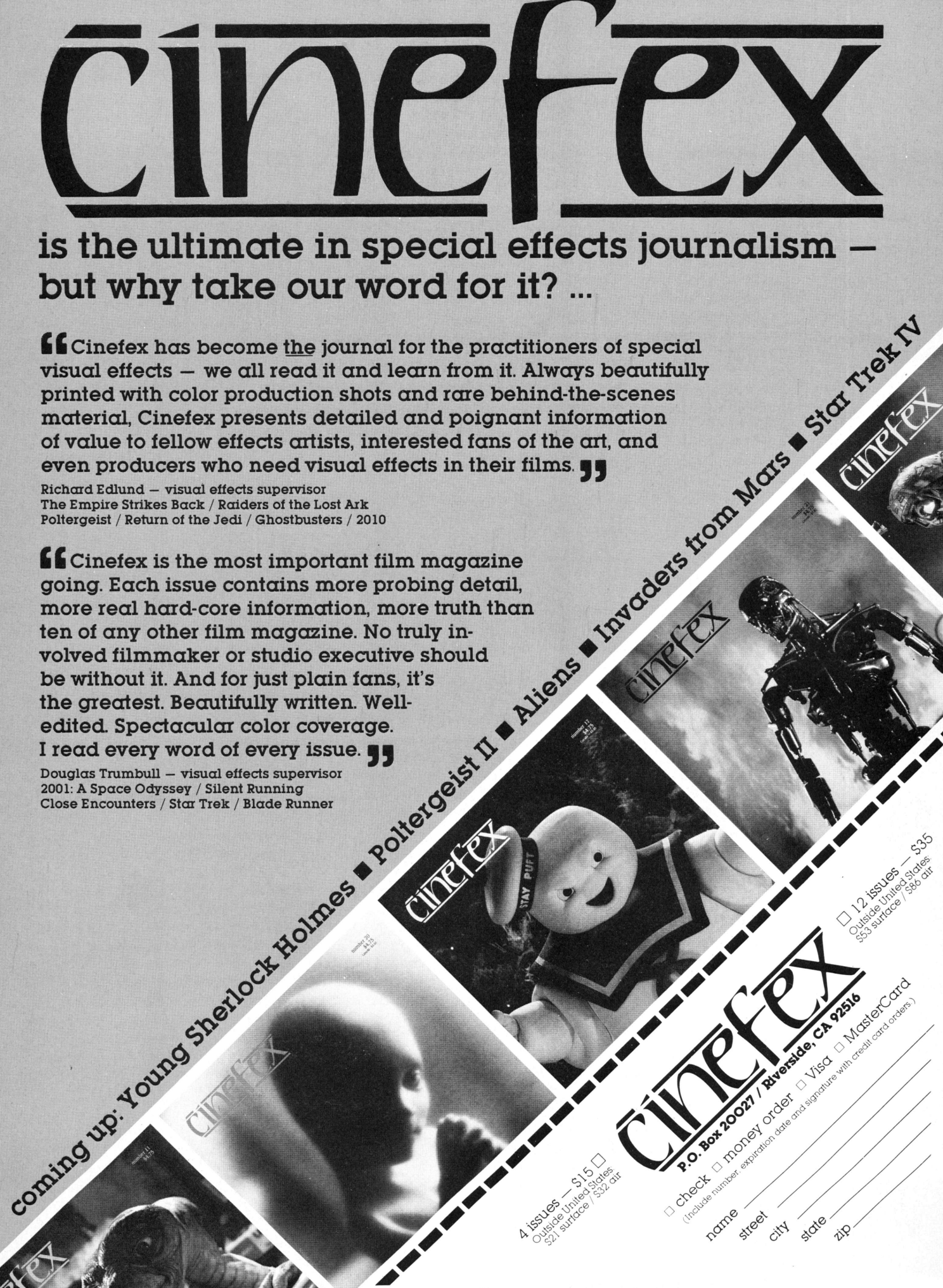

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stroke to it. The 94 tends to have a little more grain but it's not something that bothers me, so long as you can play your lights and darks in such a way that the feeling is there. I've seen some lovely stuff shot with 94 and it's becoming more and more popular all the time. I think the stocks should mesh together pretty well to the point where the average moviegoer won't be able to tell the difference between the two."

The gritty nature of the stock was nicely complemented by the use of polarizers for shots of the planes. The actual steel resembles titanium painted gray with small panels and tiles all over the body.

"Sometimes I'd look at these airplanes and they'd almost seem like starships out of *Star Wars*," Kimbell remarked. "We sucked the reflections out with the polarizers so the jets took on a hard, matted sheen – sort of like a dull armor."

Phase 4 of the production saw the crew move to the naval air station in Fallon, Nevada for filming ground-to-air sequences as well as more air-to-air. Twenty pilots participated in these scenes, which were filmed with an elaborate tracking system owned by the Air Force.

The tracker is an electronic Cine Sextant system of the Instrument Marketing Group (formerly Photosonics) which ignites up to eight instrument cameras. *Top Gun* used only six. A large turret on wheels, modified directly from a howitzer mount, the tracker consists of a rack of cameras which can turn 360 degrees. The cameras are equipped with extreme telephoto lenses (up to 4800mm). The system is used by the military principally to track missile and weapons systems into outer space.

Scott and Kimbell scouted a number of locations before finding a marvelous 400-foot precipice which hung over a tremendous sink. The spectacular rock pinnacles in the background may become famous once the film is released in May.

The tracker was flown by helicopter almost to the top of the precipice, while the crew established a base camp at the bottom. The Air Force operator couldn't afford to let the expensive piece of government equipment be hauled all the way up to the crow's nest. The tracker was situated looking out over the valley using the sky as a backdrop. The 4,000-foot drop enabled the jets to perform maneuvers level with the cameras, while three operators tracked them from the ground. They photographed the F-14s zooming up from below and darting between the rocky pinnacles, obtaining some startling footage.

"They'd beeline straight toward us and swoop right over our heads," said Kimbell. You don't know the meaning of the word speed until you see a 50,000 pound jet streak toward you at 300 mph. You really don't achieve a true sense of how fast they fly when you're moving alongside them air-to-air. But when you're static shooting with a 1600mm lens, and the object comes straight at you, you get an incredible sense of how fast they really travel."

In order for the aircraft to align themselves on the mountaintop, the crew flashed survival mirrors. One of these mirrors later came in handy when Scott was out scouting locations in his car at sunset. Kimbell and a pilot were looking for him from a helicopter and by chance happened to see his survival mirror flashing on the desert floor.

"We tried making the skies very blue and more interesting by using Harrison sunset graduates," Kimbell noted. "We always had our formidable collection of glass on hand if we wanted it. We had made a number of tests previously on commercials, so we knew what to expect."

Jack Cooperman, ASC, photographed both above the surface (from a helicopter) and undersea during the air-sea rescue sequence. "We were able to exaggerate the sunset with filters," Cooperman said. "The wide shots really worked well, with the filters set for the horizon. Actually, we created sunsets in the camera."

A very real-looking special effect – real, because it actually exists – was the Miramar TACTS Trailer. A highly sophisticated computer link-up records the pilot's air combat maneuvers on video, allowing them to re-examine their dogfights at a later date. The pilot types in the command and receives whatever view of the encounter he wants.

The TACTS Trailer resembles a big rear-projected, two-color vector writer. Some might compare it to a giant video game. Unfortunately, the computer graphics run out of phase with 24 f.p.s. cameras.

To alleviate this problem, Kimbell filmed the graphic directly off the screen onto 35mm film running at 32 f.p.s., employing a 1440 shutter to eliminate flicker. He next transferred that to 24-frame video. With the actors seated in the foreground, he ran the ¾-inch videotape onto a rear-screen video beam projector. He recorded this composite in Super 35 with a Panavision camera running at the normal 24 f.p.s. Thus, the same real-life video look was achieved, now in-sync with the camera and sound equipment. Dick Clark was in charge of the video systems.

Kimbell acknowledged the help of scores of people, without whose assistance *Top Gun* might never have flown. "The film's not full of special effects; it's full of reality," he concluded. "I believe the film will feel very real when people see it. Everything was directed to give the sensation of actually being there, experiencing it.

"I hope audiences will come away with an impression of being involved in the subject matter and the photography, leaving them with an emotional response. If that happens, then we've done our job." △

Les Robley is a Los Angeles writer, whose expertise is film with emphasis on special effects and animation.

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North and South: Book II for Television

Produced by ABC Television
Directed by Kevin Connor
Jacques Marquette, ASC, director of photography

by Ron Magid

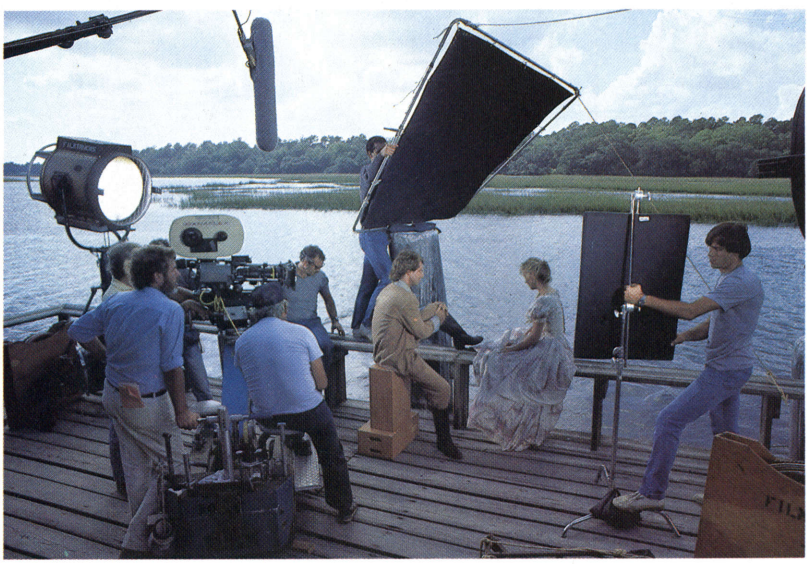
The Civil War was undoubtedly the darkest period in American history, a four year long conflagration that almost destroyed the fabric of our Constitution and our nation forever. This brutal war and the events preceding it are the subject of ABC-TV's novel for television, "North and South – Book II," a twelve-hour saga that chronicles the lives of two fictitious families against the rising tide of aggression that begins at Fort Sumter and ends with the surrender of the Confederate army at Appomattox. The film for television is based on John Jakes' historical romance, "Love And War," and is the sequel to the highest rated miniseries of 1985, "North and South."

Director of photography for the production is veteran ASC member Jacques Marquette, whose half-century of experience was tested time and again during the course of the film's mammoth 110 day shooting schedule. Though the prospect of a six month production shooting in five states and requiring over 2500 setups might have seemed a daunting task to experienced cameramen many years younger than himself, Marquette notes wryly that there is a prejudice on the part of pro-

ducers towards employing someone of his age. "I'm an older man, and while I'm sure there are younger men who are equally talented, I've been fortunate enough to assimilate what I've learned over a long period of time, while they have to learn it yesterday and use it today. There are bound to be areas where a younger man may not have learned as much, and the production has to compensate."

In a twelve-hour drama designed to capture the epic sweep of the Civil War years, to compensate in any way would mean to compromise director Kevin Connor's vision of creating as cinematic a TV movie as possible. Connor and Marquette agreed from the outset that one of the primary differences in the look of a feature film versus that of most films for television were the scope of the shots. "What happens so often in TV today," Marquette explains, "is that there are too many close shots and the poor audience never gets a chance to see where the hell they are. You need to show the audience where the action is occurring, whether it's big and elaborate or very small. Otherwise, it takes away from the story, because the sets and locales are a very important part of that story. Fortunately, Kevin Connor and I had the same idea: to first let the audience know where they are and then go in for our closer shots to reveal the more intimate details, which is exactly the way we used to make features years ago."

In order to convey the visual scope of the Civil War era, Marquette and Connor devised shots on a daily basis that matched or exceeded the complexity of camera moves in feature films. Though elaborate set-ups are not unheard of in television, because of the nature of the medium they are very hard to accomplish due to the limited time available. "Preparation is the key," notes Marquette, "and Kevin Connor was totally prepared. He knew exactly what he was going to do each day. I would suggest certain shots to him and, even though most of the time they were very elaborate, he'd incorporate my suggestions. It would make it more difficult for me, but the more elaborate the set-ups became, the more I liked them. Consequently, we were both in perfect accord throughout the shoot."



Opposite page: ***Many of the soldiers photographed on the battlefields are hobbyists who specialize in reenacting the battles of the Civil War. Five cameramen also donned uniforms so they could shoot closeup action.*** **Above:** ***Certain scenes were hard-lit for dramatic impact.*** **Below:** ***The Old South provides a romantic setting in the mini-series.***

To capture the period splendor of 19th Century America, Marquette employed Panavision 6-1 and 10-1 zoom lenses for most of the production, while for the bigger scope shots during the major battle scenes he used Panavision's 14mm lens. "That lens was just tremendous," Marquette recalls, "because there's actually no bend to the horizon. In the past, and even today, there is a tendency in the 14mm lens to bend the image, which creates a tremendous amount of distortion, but with the Panavision lens, the image is straight across. We needed to get as wide as we possibly could in the battle scenes to show the audience the scope of those things. With all the men fighting, cannons and artillery going off, we wanted to give the

Above: ***The meeting of President Lincoln and General Grant is costumed and recorded with the greatest attention to accuracy.*** **Below:** ***Crew works on typical scene of Southern life.*** **Opposite page:** ***Battle scenes were done in great part by actors and re-enactors whose historical interest in the Civil War enabled the costuming and weapons to be true to the era.***

audience the feeling of size." Marquette used Kodak 5247 stock for nearly all of his exterior shots and 5294 high speed stock for the night shots and interiors. He also used 5294 for some exteriors shot in South Carolina, necessitated by adverse weather conditions. "Some of the weather was so bad that I had my lens wide open during the day," Marquette remarks. "You have to figure out your best exposure and try to film at a lower scale so you have the best contrast while making the composition fit the dramatics of the scene in terms of whether it should be brightly lit or highly atmospheric. When you're looking at a shot with a scope of two or three miles in the distance, you just have to accept God's will in terms of your contrast level."

A number of the most spectacular shots for "North and South – Book II" were photographed in Charleston, South Carolina, including a complex crane and dolly shot that opens the film. Charleston was chosen to represent Civil War era Washington, D.C., because of its beautifully preserved historical buildings, but the streets had been modernized and created a new set of problems for Marquette and his crew. "We had a sequence earlier in the film where a parade was taking place in front of the War Department," Marquette remembers. "Our dolly and crane shot began against the side of this huge building in Charleston which had been modernized in the sense that its parking lot was made of black asphalt. We had to put dirt all over it to make it appear as it did in the Civil War, and then we had to do a tremendously long crane shot dollying along as we followed the band. We dollied for about a block in the parking lot with the dirt on the ground, and then all the way around to the front of the building. In making that elaborate crane shot, the dirt tended to interfere and make it kind of rough, so we had to keep smoothing it out until we knew that a jolt here or there wouldn't reveal the presence of the camera to the audience. We had that problem everywhere we shot in that area because the streets were all surfaced and had to be covered with dirt. One of the secrets, to me, of good storytelling is to never let your audience become distracted because of some big camera move."

Shooting the interiors of Charleston's historic homes proved an even more difficult task given the complexity of Marquette's shots and the closeness of the quarters he was working in. "In some of the old mansions we had to do some very elaborate shots which, in some cases, were very difficult to photograph," Marquette recalled. "They were so enjoyable to do, such a challenge, and we were able to use them to create so many different effects, but it would take a camera operator of the highest caliber to be able to handle these shots. We would begin by shooting one angle and then move the camera about 300 degrees or more in one continuous shot, which required some very elaborate lighting. Shots like

that took about two hours each to set up, and about four takes to get. There was one shot I recall where we were up on a second floor shooting through a glass door at a person coming up the stairway. They'd come through the door and we'd stay with them as they entered the room and then pan as they moved into the hallway and bedroom, using a fairly tight zoom lens. During one of these shots, my regular operator got sick and another operator from Chicago and myself both tried to make the shot and couldn't do it because it meant walking 300 degrees around the dolly. I mean, where do you put your body? Not to mention the fact that your eye has to be up against the eyepiece the entire time!"

Using genuine historical locations and buildings was only one facet of the production's effort to maintain a strict standard of authenticity throughout. To insure historical accuracy, Ray Herbeck, an expert on the Civil War era, was brought in to supervise all aspects of the production. Herbeck's expertise was primarily brought into play during the shooting of the five different battles portrayed in the film, which he choreographed at the insistence of director Kevin Connor. To portray the multitudes of Union and Confederate soldiers, Herbeck employed the talents of re-enactors from across the country, hobbyists who recreate key scenes in American history using flawlessly accurate costuming and weaponry.

"I am one myself," Herbeck explains. "Getting the correct re-enactors for the battles we were shooting was a matter of contacting 30 to 40 groups around the country to find out which ones had the right uniforms. I ended up choreographing the battles because I know the era and I've participated in a lot of battles, since we recreate battles as part of the hobby. When Kevin and I scouted locations, he gave me the job of making the battles look right. He wanted to do them correctly, the way they were really done. He told me what he needed

dramatically to conform to the script, and I told him what were the historically important points of each battle. Then we choreographed the battles to portray those points and condensed the action down to about four minutes so we could actually roll straight through without cutting. Once Kevin and I had worked out the battle plans, we brought in a storyboard artist to give us an aerial view with a little clock down in one corner showing how many seconds each particular phase of the action would require. I organized my army of 1300 people into eight brigades with commanders, just like a real army, and I gave them each a copy of the storyboards. Because the storyboards had been drawn in a historically correct fashion showing the right formations, my men could read them and understand what they had to do to make the armies move. It was the real thing, only as hobbyists, we'd spend an entire day fighting a battle, while here, we had to condense them down into four minutes."

Though Herbeck is quick to point out that all the artillery, cannons and firearms used in the film are real, a very special special effects crew headed by Russ Hessey supplied the ground and aerial bursts as well as all the other "acts of God" required to bring "North and South - Book II" to life. Hessey is quite familiar with Civil War equipment, having

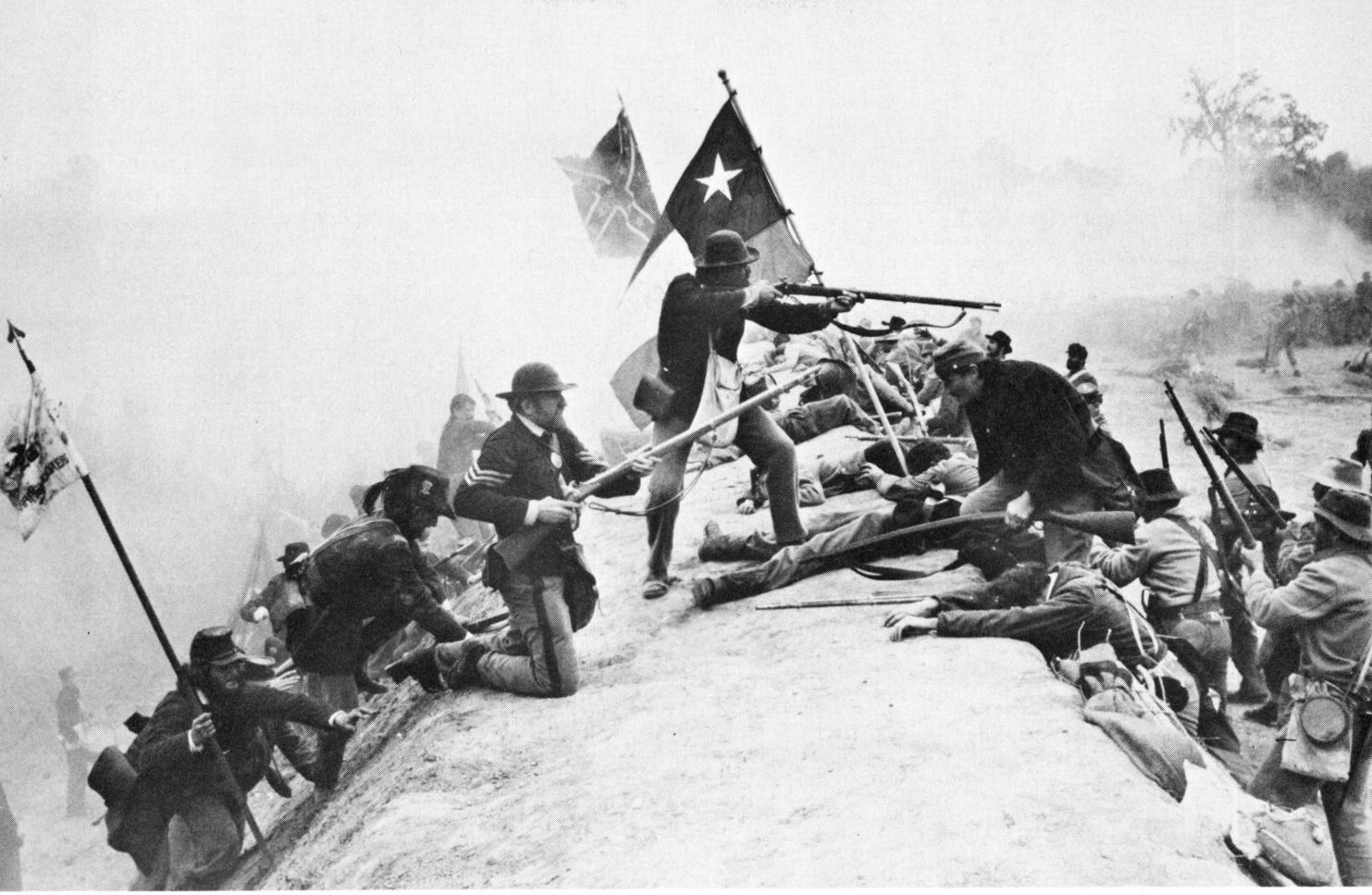
Wounded drummer boy borne from the field

spearheaded the effects for "The Blue and The Gray" as well as for the original "North and South," but the logistics of "North and South – Book II" required all of his organizational and technical skills. "We did mostly everything in one take," Hessey says. "We had to be very careful because we'd have 25 to 30 miles of wiring in the ground, and horses have a tendency to pick it up, carry it, and break it. The staging of the battles was monumental. Most of the battle scenes required 150 explosions and we had 19 effects men operating them. We had 100 steel mortars in place for the explosives to go into, and we had about seven trucks to carry all the ingredients that went into the explosives. It was a major job coordinating everything to get all of our stuff to the right place at the right time. All the work was done right on the site, and all of our flash-packs were made up individually. We bought about 1,000 pounds of black powder from a place in Jackson and we used the bulk powder to make up our individual bombs on the site as well."

Timing became critical for both Hessey and Marquette in terms of coordinating the movement of the troops, equipment and explosions with that of the camera. "Jacques and I worked very closely together," Hessey recalls, "since his camera was recording the action. The camera had to be in position to record various events as men arrived on their marks and bombs exploded, rather than to have these things happen before the camera was in place. Jacques would tell me where the camera was going to move, what his lenses were, and what things would be encompassed in the shot. There was one shot on the Henry house where there were 27 cannons firing in front of the house on the battlefield, and Jacques had to shoot the house in between the volleys so that the smoke would barely clear. The camera was focused just on the house, and Jacques was using a very tight 1000mm lens. He would signal me to let me know when the area had cleared enough to photograph the house and then we'd fire again. We worked with Jacques all the time on just about everything we did. He's a very excellent man, and he and his camera crew did a marvelous job."

In planning the shooting of the battles, Marquette also had to deal with the potential problems of having his own men working in the midst of the action, in order to get much needed point-of-view shots. "We had five cameras shooting the battle scenes," Marquette says, "and we had some of my own camera people dressed up in Civil War uniforms just to get them within the action. There were cannons and muskets going off all around them, and because of the thousands of re-enactors in those shots, the camera people are very hard to spot. I must say, the re-enactors were totally into the whole thing. You couldn't get any actors in Hollywood to do what they did, and they were authentic. The battles we shot were tremendous stuff, and in order to get the most from the visuals, the night before my crew and I would examine a diagram of the battle that was to be fought the next day, and we'd discuss where the cameras would be placed and what lenses we were going to use. We also tried to make each battle look different from the others, which was helped by the fact that they took place in different areas and thus the topography of the land itself told the audience that this was a different place."

Regardless of where they were set, the tremendous scope of the battle scenes made them exceedingly difficult to light. "In handling most of the battle scenes," Marquette recalls, "they were so huge that there was just no way to light them. In other words, I had to rely almost exclusively on natural lighting. We lucked out, since for the majority of the battle scenes, we were running into primarily overcast weather which was, to me, a great advantage. The weather was morbid and moody, which set the stage for what was to come. The overcast weather was also advantageous in that we didn't have to contend with the high contrast from a bright sun. If the sun had been out in a bright section of the plains we were shooting in, it would have made the darker areas appear practically black, and then the audience wouldn't have been able to see what was happening. Of course, some of the time we were working in mud up to our knees because the entire battlefield would become washed out. The art director and his construction people did a tremendous job of building huge trenches that went on for three quarters of a mile, and the historian, Herbeck, supplied them with all the information about how the trenches were to be dug and how deep they should be. Everything was so well done, so well thought out and so well planned."

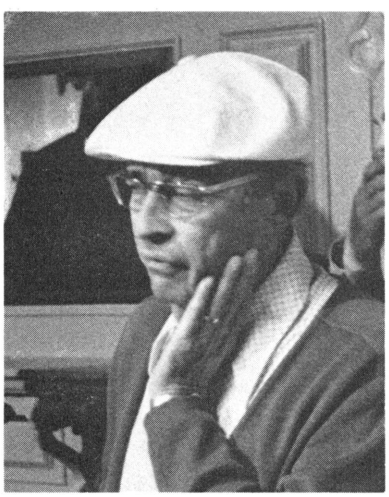


In the mode of D.W. Griffith's Birth of a Nation, this battle scene is fought on a hillside in Mississippi.

In staging the surrender of the Confederate forces at Appomattox, Marquette tried to capture the same cold, hard photographic mood that had lent such power and poignancy to his earlier battle scenes. "Lee's surrender was really emotional for me," Marquette remembers, "we almost cried when we shot it. We did that with about 1500 troops on horses and wagons. There were huge companies of men stationed on both sides as one rider came in carrying a white flag, and there was dead silence. Fortunately, a wind came up and blew all the leaves out of the trees, and they came fluttering down. It was as if we had planned it, but we hadn't. It's a real tearjerker, and I tried to treat it as coldly as I could. In some cases, I used a slightly light blue filter on the camera to give a coldness to the images, in order to complement the mood of the story. We had five or six cameras shooting the scene from different angles, and we used an extremely wide angle lens for the most part, so once again there was really no way to light it. When Lee's group rode into the center of the camp and Lee dismounted and met with Grant, we were able to light those closer shots with four or five arcs. We also employed a Chapman crane, and for certain shots, I put an arc on the crane."

Lighting "North and South – Book II" challenged Marquette over and over again as set-up after set-up required a highly delicate, specialized touch in order to differentiate between the coldness of the war and the warmth of the human drama unfolding against such a forbidding backdrop.

One of the problems Marquette encountered in trying to give the lighting as cinematic a gloss as possible was a predisposition amongst certain members of the crew to light the scenes overly brightly. "I had to keep saying, 'This is not "Laverne and Shirley" '," Marquette recalls. "In other words, I didn't want everybody lit fully, which you have to do in a comedy because the actors' eyes and mouths are so important. Because this was a dramatic piece, we had to play it so people's faces were dark on one side. Sometimes we'd even play part of a scene in silhouette, where you'll just see a dark figure pass through the background. However, when the dialogue or action was specifically important, then we had to see the actor and so I'd have the director stage the scene in such a way that the actor could first pass through a dark area and then move toward the camera as he spoke his lines. That way, it gives the audience a chance to imagine far more than you could ever reveal with dialogue. My basic approach to lighting is to find the right sized light – one light – that's all. For the more soap-operish aspects of the shoot, I used a soft light with a colored gel to give a kind of golden glow to the scene, in conjunction with a particular filter I like called a half 85. It's a pinkish filter, and it adds this rosy, happy feeling to the shot. On the other



Crew sets up at plantation home.* Below: *Marquette in pensive mood.

hand, for the more dramatic scenes, I used a hard light to create a hard effect, the powerful look of half light and dark."

Some of the most difficult lighting Marquette had to design was for the numerous night shoots, where nearly every type of practical light had to be hidden in order to maintain the film's historical accuracy. "We had a lot of night shoots," says Marquette, "and those, of course, went far slower than our day shoots. It's a matter of how large an area you want to see at night, because the larger the area, the more light you need to get some detail into the blackness. We couldn't allow the audience to see any of our lighting, so we always had to hide our lights and either put in candles to explain the light source or use gaslights where they were available and fitting for the period. One of the most difficult of these night shoots involved a boat crew bringing contraband in as our heroes were trying to stop them. The heroes were on the beach as the boat came in. We were shooting down inside of a canyon in Malibu looking out at the ocean with cliffs on all sides. I had to put the lights approximately three blocks away from where we were shooting, up on the cliffs. We were working with arc lights up there, and only by using high speed 1.1 and 1.6 lenses could I get enough of an exposure to capture the scene."

Marquette's work on "North and South – Book II" is the current peak of a five decade long career that began, humbly enough, with a job in the "wet-" and "dry-end" of the Technicolor laboratories in the three-strip days of 1938. Before long, his brother, who was working as a cameraman himself for Technicolor, helped Marquette land a position in the camera department. Marquette worked for Technicolor for many years as either a first or second assistant cameraman on a number of Twentieth Century-Fox musicals starring Betty Grable, and he worked on *Anchors Aweigh* and other projects for MGM. Shortly thereafter, he made the treacherous move up to camera operator, which at that time was often very temporary due to the scarcity of work. After a lean period where no jobs were forthcoming, things began to click for Marquette. By the late 1950's, he was working on a number of independent projects, including several films for Roger Corman at American International. Marquette soon set up his own independent production company, hired himself on as cinematographer, and made five films, including the cult movies *Attack of the Fifty-Foot Woman* and *The Brain From Planet Arous,* before shutting the company down. Since that time, Marquette has continued to work on independent features and countless television programs as the director of photography. "I prefer to work in television," Marquette says, "because TV actually provides me with a more constant working arrangement than features. Most guys who shoot features make about two a year and make very good money, but working on a TV series, I work six to nine months a year and make better money, even though the hours are longer."

Marquette regrets that much of the artistry has gone out of feature films and television because producers refuse to provide funds to reshoot scenes, even if it is vital to the project. "In the old days," Marquette reminisces, "if we shot a day's work, the producer and director might agree that it looked nice, but it might not be exactly what they wanted, so then we'd go back and shoot that same scene over again in a different way. Today, there's no time to do that, and there's no money either, so if a scene isn't done right, it's still what the audience sees, which is sad. Basically, what you're trying to achieve is to make the entire picture, the actors, the background, and everything, look like something that's real to the viewers. Photography is only light and dark, and it makes no difference if you're using a 50mm lens or a 75mm lens. It's what's being said in a scene, and your interpretation visually to make it appear realistic."

After nearly 50 years of using his camera to suspend audiences' disbelief in both film and television, Marquette's plans for the future are to continue to provide the best work possible. "I just want to keep shooting," Marquette grins, "until they put me in a box!" △

Ron Magid is a regular contributor to these pages.

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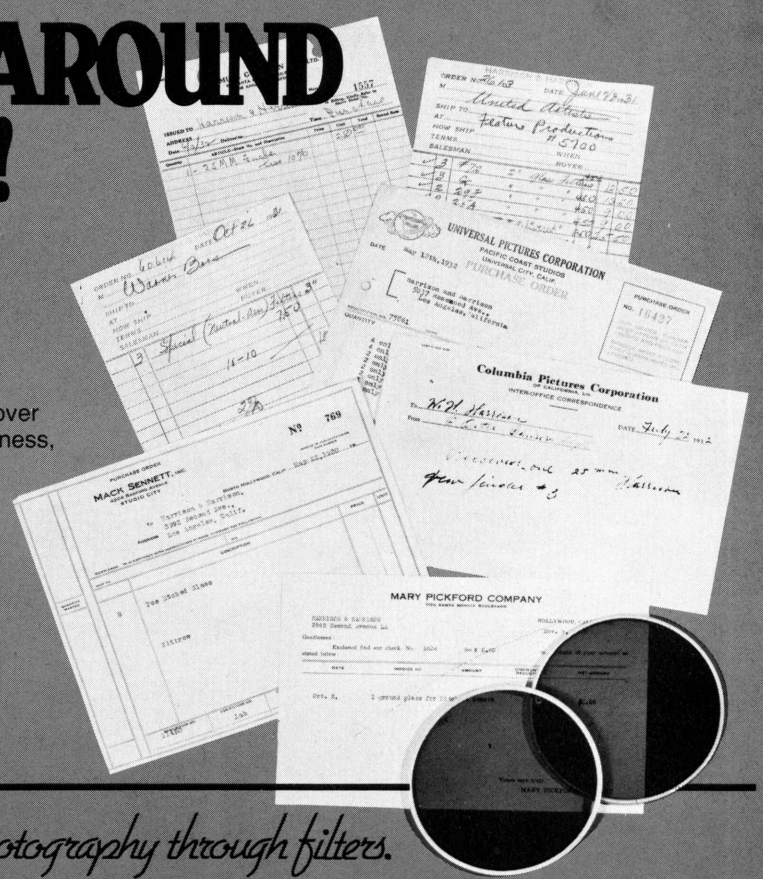

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Photo by Eddie Wolfl

Rip Van Winkle Joins Faerie Tales

Produced by Shelley Duvall
Directed by Francis F. Coppola
Lighting director George Riesenberger

by Ric Gentry

When Shelley Duvall's Faerie Tale Theatre first aired "The Frog Prince" in the Autumn of 1982 on Showtime's cable network, it was immediately obvious that an aesthetic and technological breakthrough was happening for the video medium, not to mention for television. There was a classic tale of the imagination portrayed trenchantly and with great wit. There were established creative talents in the roles of the protagonists – Robin Williams as the giddy amphibious hero, for example, and Teri Garr as the petulant princess. The program was written and directed by Eric Idle, of Monty Python fame. The costumes, the sets and the make-up were elaborate.

Above all, perhaps, was the quality of the images: rich color and sensual texture; complex, multi-tiered lighting yielding extraordinary depth; tracking camera, wide lenses and unusual angles; and special effects that virtually defied understanding (after all, Robin Williams spent most of the show, on-camera with Teri Garr, the apparent size of a frog, and with utmost credibility). Yet, only $350,000 (the original budget, gradually doubled, and split between Showtime and Gaylord Production Company) was expended on this 50 minute video production.

"When we started out we had an arrangement for three shows," executive producer Shelley Duvall explains. "We really didn't know where it would go. We were new to video and we were learning as we went, a real baptism by fire. Originally we thought film was the only medium that could give us the quality we wanted, but time and budget constraints made video a necessity. What we did was marry video technology to film technique. As we went along we learned more

about video, and I think the nature of the fairy tales, their limitless appeal to the imagination, made up push video farther and farther into new territory."

The instant acclaim and popularity of the Tales quickly led to an extended contract with Showtime for 26 programs, each produced with the attention ordinarily reserved for a TV special, rather than a TV series, since the directors, writers and cast changed with each program. "None of the fairy tales are alike," Duvall points out, "and I try to match talents that will complement them or bring out a unique quality."

Francis Ford Coppola, a video advocate and visionary, was asked to direct the 26th program. It was to be his first with video as the medium of record and his first television production.

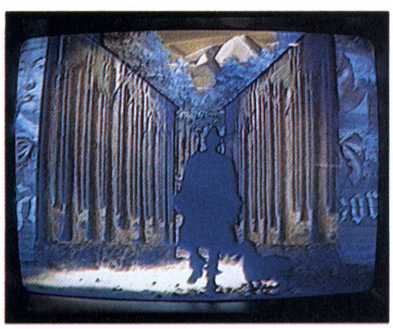
"I met Francis at a Santa Fe film festival which was honoring his work," Duvall recalls, "and he brought along his silver mobile video truck, a converted air stream trailer. He demonstrated to everyone what he had been doing with video, how much he believed in it and how it worked with his films."

So out of mutual interest and respect, Coppola committed to directing one of Duvall's Faerie Tales. As expected, logistics and scheduling had to be worked out, and in the end Coppola rushed from the conclusion of *The Cotton Club* to the Faerie Tale offices, then at ABC on Prospect in Hollywood, to inaugurate production.

Of the several tales that were offered to him, Coppola was partial to "Rip Van Winkle," the American legend of an indolent but good-natured upstate New Yorker who wanders into the Catskills and goes to sleep for 20 years.

"I wanted to do 'Rip Van Winkle,'" Coppola says, "but I wanted to have a number of different areas of experimentation. For one thing, I wanted landscape and visuals to become an important part of the story. 'Rip Van Winkle' doesn't have much of a story. We all know something of it, but there isn't this whole complicated story with conflict in a way that normally a fairy tale has. So I thought, this was an American fairy tale and the mood and the environment we could create visually might be really something unique. And in particular, when I talked to the company, I said I wanted to make a Kabuki fairy tale. I wanted to use Kabuki techniques."

Photos by Lynn Houston

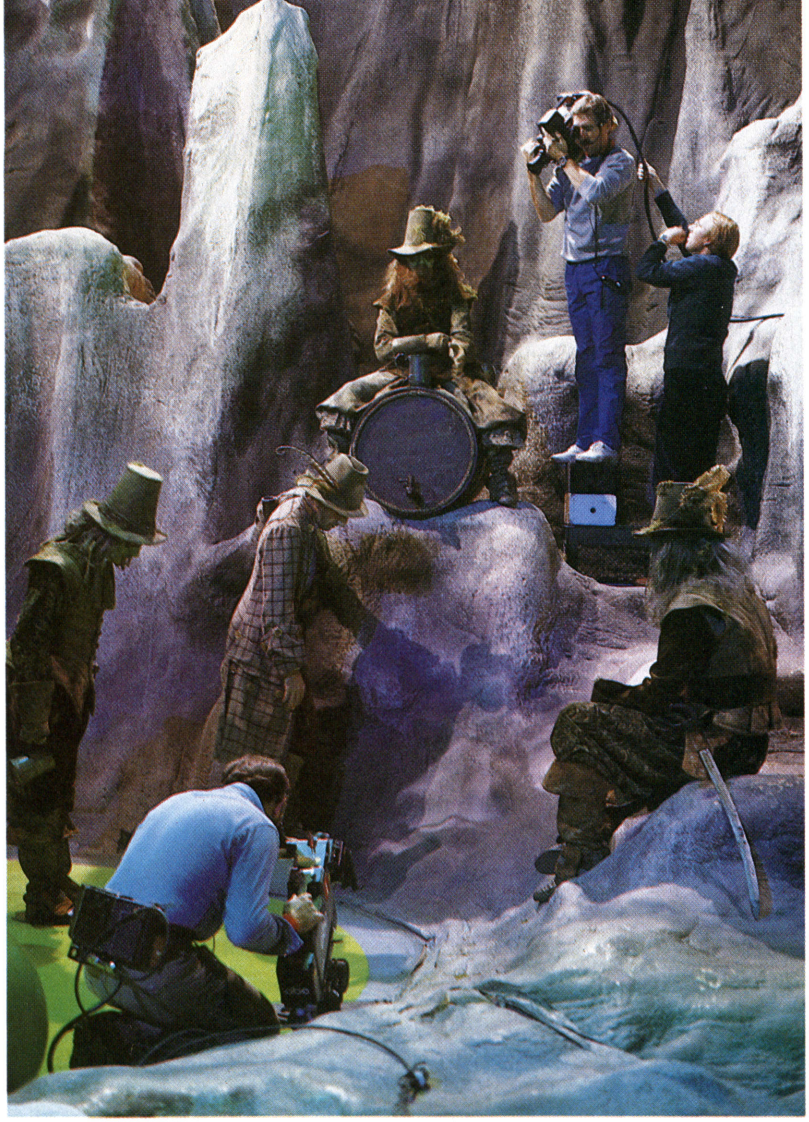


Above: ***Rip comes down from the mountain.*** **Left:** ***Rip walks through the entrance to the mountains.***
Opposite Page: ***Rip Van Winkle (Harry Dean Stanton) and his beagle, Wolf, fish for the elusive Ben (Ty Crowley in costume).***

Kabuki, in brief, is the ancient Japanese theatrical tradition which prefers to allude to more through minimalist design and hyperbolic expression and, in doing so, encourages the viewer to imaginatively participate in the drama. In tone, Kabuki strives for mobility, plasticity and the unpredictable, freely incorporating trick effects achieved with mechanical lifts, trapdoors and revolving stages. Coppola has had a continuous interest in Kabuki, most evident in *One From the Heart*, where walls were or became transparent, and separate locations were viewed with such simultaneity that they often appeared to coalesce. "'Rip Van Winkle' is even further in that direction," Coppola says.

One of Duvall's original concepts for the Faerie Tales has been to appropriate a master storybook illustrator, such as Maxfield Parrish, Edmund Dulac or Arthur Rackham as an inspiration for the overall artistic design. At times painters such as Gutav Klimt or Pieter Breughel were used. The designation of the illustrator also economizes time by giving the set director, the costume designer and the make-up artist a unified and immediate starting point. With "Rip Van Winkle," Coppola brought in Japanese designer Eiko Ishioka, who had recently worked on Paul Schrader's film biography of legendary novelist and playwright Yukio Mishima on which Coppola functioned as executive producer.

"I probably did 10 sets of drawings for this show," says Mike Erler, production designer.



Cameraman Ralph Alcocer sets up a shot in the caverns featuring Commander Heinrich Hudson's ghostly crew.

"All of them were too traditional. Francis didn't want to do anything that was traditional television or film style. He was trying to see how stylized and how much of a statement he could make – a total visual statement. He wasn't working with how much he could put on stage, but how much he could do with as few elements as possible – again, the Eastern philosophy. He's done movies for millions of dollars so he wasn't trying to do a mini feature film. He was going back to something more fundamental: a fresh, clean minimalist mode, to see how much he could do with little."

Beyond that, with the designer on the set, a greater amalgam of ideas by the creative participants could be enjoyed. "Usually the responsibility is given to myself and the lighting director to produce the look (of the Tale) with, of course, the director's input," Erler adds. "In this case, the director was willing to be involved and brought consultants with a vast amount of knowledge and creativity. And because we were experimenting in so many different areas we all benefitted by the involvement of these people, including Murdo Laird, myself, George Riesenberger, and producers Fred Fuchs and Bridget Terry, all who have a pretty good idea of what can be done."

Even so, special preparations had to be made in advance to accommodate Coppola's ambitions for landscape. Despite shooting at ABC's Studio 59, the largest in Hollywood, the story would feature not one interior setting. All of "Rip Van Winkle" would be situated outdoors. The idea, in part, was to suffuse emotion, character and theme into the widest concentricities of a dramatic center. "It's almost as if the scenery *is* a character," Coppola remarks.

As a consequence, the Ultimatte process, with which Coppola had photographed his electronic storyboards and prototype films and Faerie Tale Theatre was used to enormous advantage for their special effects.

"We had never tried it before," remarks Fred Fuchs. "Murdo introduced it to us. He understood the process and worked as an intermediary between everyone involved with it. He and Paul Vlahos of the Ultimatte Corporation spent a day or two with the ABC engineers before we started. Then as we got into production, the double-Ultimatte became a vital part of almost 85% of our shots. It was a tremendous improvement on anything like this we had done before."

The challenge was to provide credibility, quickly, with five cameras and at least three separate levels of visualization. In most instances, this would start with one camera on a close-up of one of six sky paintings. Another camera would view what the production termed "the living mountain," a facsimile of a mountain made of gray (in effect, neutral colored) cloth approximately 30 feet square under which six dancers could take direction during the shot and move into appropriate positions accordingly. A third camera was positioned as a master to view the principal activity of the characters. Two auxiliary cameras would record details of the performances from different vantage points.

Ordinarily, the double matte might be accomplished by recording one composite first, then played back as the background for the set to which another Ultimatte would be added later. Here, all three portions of the matte, generated at different points within the studio, could be viewed live and in conjunction with one another. What made this possible was a unique item from the Ultimatte Corporation that

featured an RGB signal at both its input and output.

"In that way, you only encoded the matte signal once it was being laid down on tape," Fuchs says. "Because everytime you encode the signal and put it down on tape, you've compressed the dynamic range of the material. A camera, obviously, has a much larger dynamic range than a piece of tape. Tape has only your basic NTSC restriction to it.

"So instead of making a matte and playing back another matte on top of it, the background of the second matte was never encoded until a complete matte was made of both parts together. It allowed us to make a much cleaner and better looking combination matte."

The double Ultimatte was further enhanced by illuminating the blue screen with light of the same color. "It made such a difference it was unbelievable," Fuchs goes on. "We wanted to use blue objects in front of an Ultimatted screen. We had an American flag in one scene, for example, and the general rule of thumb is that you can't use blue in front of a blue screen. But what Paul Vlahos showed us was that if you lit the blue screen with blue gel, it makes the blue saturated and such a specific blue that the Ultimatte could actually distinguish between that blue and the dark blue of an American flag, and make a perfect composite."

The reason blue gels can't be used universally is that the blue sceen is usually accompanied by a blue floor, and the actor on the set would ordinarily interfere with the cast of the blue beams. With "Rip Van Winkle," the floor was comprised of actual earth and grass, providing enough separation and distance to illuminate the blue screen with lights anterior to the pure white lights on the characters.

To the animated mountain, shifting frequently from shot to shot and often within shots, and usually echoing the emotions of the characters (such as rising behind Rip as he's scolded by Wilma, his wife, played by Talia Shire), or the emotions one associates with Nature at certain times of day (deflating at sunset, for example), was added a spectrum of colors that regulated the mood of the mountain, an idea applied skilfully and subtly by George Riesenberger.

"Because the surface of the mountain was gray we could light it in any way we pleased," Riesenberger explains. "We could create forms and shapes also. The light helped by adding these different valleys and crevices into the mountain, not by lighting it flat but lighting it from different angles, usually from the side."

It was Riesenberger who suggested panning the camera over one of the three-foot sky paintings during a scene using the double Ultimatte in order to make it appear that the clouds were drifting. "It was just building one idea on to another," he says. "Once we got going it was an unusually creative atmosphere. We worked quickly and spontaneously, but Francis planned each of those double Ultimatte sequences and they worked beautifully, terrific."

While the six sky paintings provided the backgrounds with different hours of the day, the stage in the foreground also had fluctuations. There were essentially seven main sets for "Rip Van Winkle," four of which, very much in keeping with Kabuki tradition, were built into a single rotating stage.

The primary side was the front porch of Rip's cottage. Another side was the foyer of the village pub. The third side offered a view from within Rip's cottage, looking out. Fourth was a wall in the village inn with a portrait first of King George III of England, later of George Washington (while Rip dozes for two decades, the American revolution transpires).

Mike Erler, sometimes of the opinion that exaggerated color and theatrical forms serve video best, modified his usual design concepts for "Rip Van Winkle."

"In this case," he says, "we stretched the imagery further. That was where the synthesis between East and West came into it. We were given some drawings and the original drawings that Francis and Eiko came up with, basically a flat set with a screen door on it. We had to take that and give it the texture that satisfies video. I always try to put as much texture on the stage as possible because the video camera does not have the same sensitivity to texture and grain that a film camera does. If anything is (constructed) flat, it will appear as flat as can be. I try to avoid that by putting texture, exaggerated or not, into the materials.

The caverns where Rip first meets the ghosts of Hudson and his men.

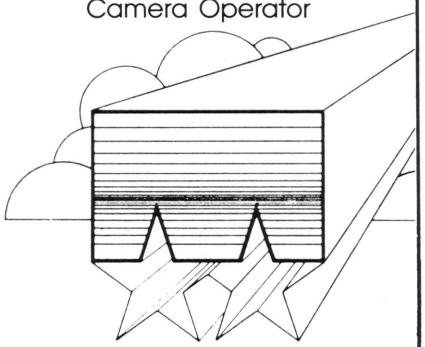
"Here we took the Eastern design by adding real timber (to the cottage and the village inn wall), for example, giving it a reality that wouldn't make the audience jump too far. With all the other experiments taking place, I thought they needed a traditional porch they could relate to, although it is traditional and very theatrical."

In addition, the camera (especially alert to exquisite composition by Coppola throughout "Rip Van Winkle"), was often able to remain stationary while the sets revolved between scenes into position. "That made it extremely easy to shoot," Erler continues. "There were plans to revolve the stage during scenes, but the time was prohibitive and we didn't deem it necessary when we finally got to it."

The rotating set was reciprocally benefitted by the use of

Mitchell Lipsiner

Director of Photography
Camera Operator



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double Ultimatte, especially in camera perspectives looking out beyond the cottage. "That was pretty much Francis' idea of creating prosceniums from an old painting of that period that has people sitting on the porch of a stockade," Erler adds. "The effect did two things. First, it gave a feeling of composition for that period in American history. Second, it contained all the action within the proscenium, so that to the eye viewing it, it appears to be a self-contained image. There are few camera moves, and there doesn't need to be more. The action is psychologically and physically contained within that frame."

Whereas in previous Faerie Tale productions Erler might be concerned with the depth of field of the cameras – its tendency to convey a small interior space as large and vice-versa – Coppola's strategy for open spaces offered no similar conundrum. "Here we were completely successful in expressing vastness," Erler remarks, "absolutely. The contingencies were totally different. In effect, Francis found a way to defy the ordinary limits of the TV screen, to do without close-ups or common devices to make a scene work. More depth could not have been conjured, yet there was an immediacy to each scene because of the activity and structures in the foreground."

Throughout the Faerie Tales, depth of imagery, via highly controlled lighting situations, have optimized the quality of the video image. Extremely sensitive Ikegami cameras have also been helpful. Contrast is developed through individual sources of light spread out over a considerable spatial depth. Each area of the set is treated as a specific problem with an emphasis on shadows and contrast to compensate for the apparent lack of definition in the video system. General lighting, even for three or more cameras, is scrupulously avoided.

Riesenberger, lighting director of The Klages Group, Inc., has lit 13 of the 26 Faerie Tales (Bill Klages himself has lit 11). From the outset, he perceived the Tales as a vehicle for better, more expressive video and experimentation.

"For the Faerie Tales," he says, "we have to think differently. We have to consider what the end product should look like and how to accomplish that, even if it's against all television standards, even if we have to shoot right into the light or completely wide open. None of that bothers me. We can accomplish a good look, a very unique kind of look appropriate to the story, though sometimes it is against the standards of what might be considered good television . . . What we do might not make proper video signals in the traditional sense, but what's on the monitor is what's important, not what's on the scope." Riesenberger also acknowledges the alacrity of ABC engineer Chuck Pharris to take exception with TV conventions.

Yet, despite Riesenberger's daring and resilience, working with Coppola on "Rip Van Winkle" was an unusual challenge. "When we first started," Riesenberger comments, "I would sometimes say to him, 'That isn't logical.' And Francis would say, 'You can't think logically. This isn't a logical show.' I had to change my thinking completely, disorient myself. Later on I'd make a suggestion and a lot of times he would accept it, because I began to think illogically, the way he wanted. So it was a major change for me, in order to help make this show look the way it did. Francis just liked pushing things to the limit, of making them unpredictable, and he made it all work."

Coppola was particularly enamored of extremely low light levels, such as the extraordinary sequence of Rip and his dog traipsing through the forest with a general reading of no more than 25, perhaps 15 footcandles of light (175 to 200 fc. is the industry norm). Nearly every scene in

"Rip" is also tinted by colored gels.

"Almost everything in the show is in deep, saturated colors," Fred Fuchs comments. "There's virtually no white light. There are scenes completely lit with green light, and scenes completely lit with red light. The video engineers kept running out: 'You can't do this. You can't put this much red in a shot.' But Francis did, and the effects are extraordinary, radical, like nothing you've ever seen.

"Once we made a commitment to this show, to put it on another level of reality, we went all the way. It's all out there. It's not bouncing back and forth. The styles all work in my mind, the blend, because they're all outside what we consider normal perception."

Three specific scenes, however, each an inspired convergence of theme, visualization and technology pushed to extremes, are especially noteworthy.

The first of these is a sequence where Rip, instead of carrying out his wife's list of domestic chores, wanders down to the nearby river to fish. As he prepares to drop his hook, he is joined by his son.

"It was probably the most unusual set," Fuchs comments. "It operated on at least three levels." The river itself is simply a blue cloth on the floor of the studio, printed with white scallops in the Kabuki style for representing water. Dry ice was added to give the river a sense of flow and consistency. A "waterfall" of phosphorescent light purls gently down from behind. There is then an enormous puppet of a fish, tinted bright orange, with an actor beneath it, wavering back and forth over the cloth. On the bank above the river is Rip, with boy and dog, preparing to toss in his hook. The hook is small, normal size, but when he motions to cast it into the river, a much larger hook, one appropriate to the human-sized proportions of the fish, drops from the grid above instead of the first one. When Rip

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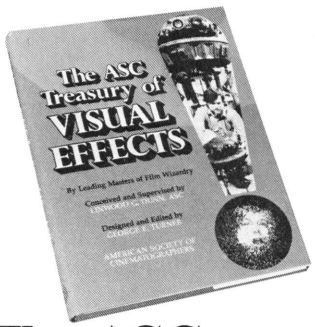
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reels in the fish, the hook – as well as the fish – is once again life size.

"All that sophisticated technology was combined with design techniques that have existed for thousands of years," says Fuchs. "Putting those two together certainly got us a very unusual look."

The second unique scene in "Rip Van Winkle" is probably the most audacious, certainly the most difficult, dramatically, to execute.

Very simply, this pertains to the wall in the village inn on which, initially, the portrait of King George is visible. One day, as Rip is departing on a hunting expedition, the wall opens as he approaches it, literally splits down the middle, and becomes a forest. This was achieved by imprinting trees on each opposing side of a corridor formed by the split in the wall. The effect, fundamentally theatrical, though employing the double Ultimatte to include the forest and the sky beyond, is somewhat reminiscent of the Stargate sequence in *2001: A Space Odyssey,* in that a full breach in the usual confines of time and place are evoked. Rip is en route to an encounter with magic and legendary spirits. When he returns 20 years later, he will re-enter the village by the same means, with the forest closing behind him.

"For that scene to work," says Erler, "I thought I had to have a basis for departure. I had to accept it myself first, and if I could accept it, the audience could accept it.

"It was very theatrical, but we had to make it work on television – not just logically, but to the eye. Because when you're looking at a television screen, as opposed to a live play, you're creating an environment. So the set had to be an extension of the environment, integrated with it. The key to it is the real wood of the wall, and then the appearance of the trees along the flat surfaces (of the corridor). There's a continuity of texture and color. Plus, Francis shot directly into the opening, head on. What we see kind of answers the question, What does this split in the wall mean? It's right there, but in texture and light and image."

Riesenberger's expertise was also instrumental in making the effect work. "Beside the painted trees (along the sides of the corridor)," he explains, "there were several imitation trees behind, downstage, about 20 feet deep. So that the character could walk down the middle, and not be lit by the same lights that were illuminating the painted trees on the flat surfaces, I had to light them a different color. When he goes through the first time, I used green. When he comes back I used orange. The different colors gave the scene a feeling of dimension. The whole concept of the scene was Francis' idea. It's not written that way in the original script."

A third major scene takes place within a mountain, where Rip chances to meet the ghost of Captain Heinrich Hudson and his crew, all of whom went down years before with their ship, The Half Moon, in a storm. The ghosts play a continuous game of ninepins, a primitive form of bowling, and each strike of the pins with a large ball results in thunder and lightning. Fierce-looking, gruff in manner, they befriend Rip, and Hudson explains that he returns every 20 years to "look over the land, to see if future generations are taking care of it." Rip, fated to wait 20 years until his own return after that night, shares such concern, and in a way becomes Hudson's emissary among the living.

"Building that set was an enormous undertaking," says Erler. "It was about 22 feet high, 60 feet across and 30 feet deep. It was built of scaffolding all the way to the top, almost to the (lighting) grid, and covered with urethene foam. It hardens immediately and it's very rigid. It was amazing to stand on top of. Your eye level was at about 30 feet. It was pretty scary looking down."

To scale the height of the set, Coppola situated the camera

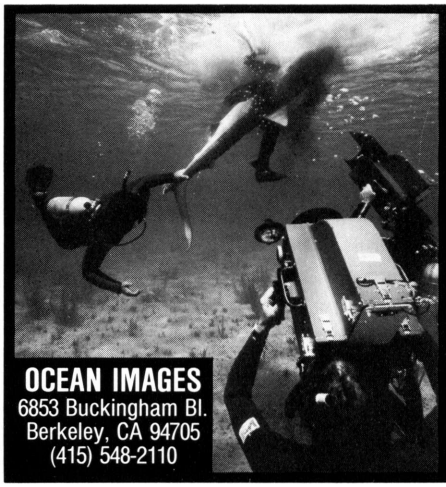
on a scissor lift, a platform approximately 5′ × 8′, usually reserved for changing or attaching lights to the overhead pipes. The camera was then able to peer down into the crater of the mountain, where the ghosts are playing nine-pins and Rip is filling their flagons with brew. Later, the Ikegami HL-79 and EC-35 were used for hand-held tilts and close-ups.

"We created a lightning effect over the whole mountain," says Riesenberger. "I put 2 HMI 6Ks on another lift downstage, and we made the lightning come from up high, above the set. One man operated the 2 6Ks with shutters on them to create the lightning, and we could move him to any portion of the studio and any height."

Rain was added to the mountain scene through a Kabuki technique suggested by Eiko. It worked by dropping 50 aluminum dowels diagonally affixed to a pole in front of the camera lens. Fog was also added by disseminating Rosco smoke throughout the set. "That kind of smoke is great for fogging the upper atmosphere," Riesenberger adds. "I thought that scene really looked good."

"We didn't get everything we wanted," Coppola says, "but we got most of it. It's just that once you get started your only concern is to get it done. But it's a wonderful kind of work because everyone's operating at their pitch, very alive, and we just worked together. The Faerie Tale people could have suggested a little less far out approach, but they were very trusting in a very short period of time. I enjoyed the experience very much."

Because of the number of cameras, editor Murdo Laird began a first assembly of "Rip Van Winkle" with 57 hours of tape. This was the first instance where the Faerie Tale producers conceded to a cut outside their direct supervision. The 1″ was transferred to Beta-1 cassettes for use of the ½″ facilities in the Zoetrope Electronic Cinema division's mobile



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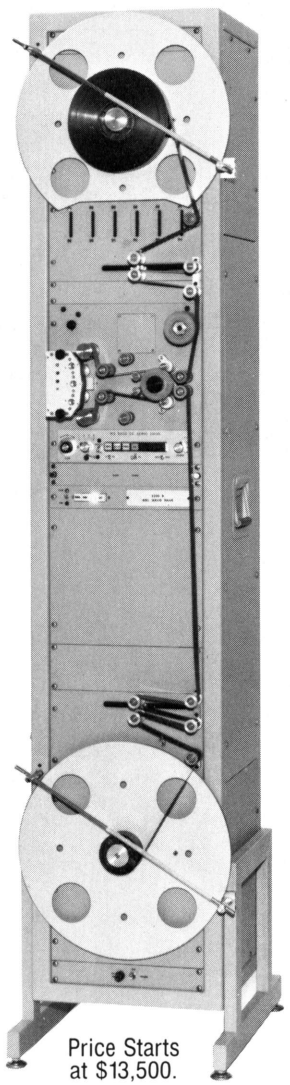

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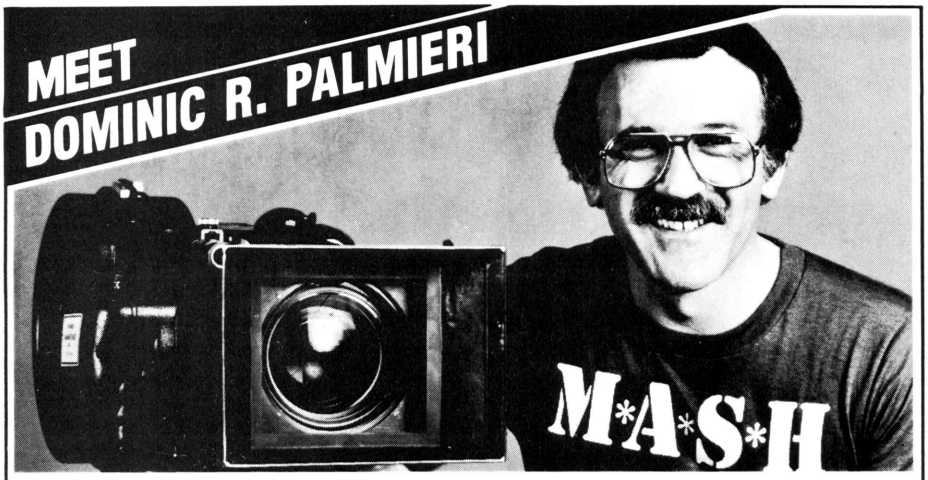

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trailer, then situated at Coppola's estate in Napa Valley, California. Six full versions were put together before Laird and Coppola were satisfied. The on-line was completed at the new Laser Edit facilities in Burbank.

Simultaneous to the on-line, sound effects were prepared by sound designer Richard Beggs, an associate of Coppola's since *Godfather II* and Academy Award winner for *Apocalypse Now.*

"The climate of our times is very tired, I think. It's not that we have fewer ideas so much as something in the culture that doesn't allow itself newer approaches. Technology is delivering new values that have yet to be tapped. We've got all this new stuff and people aren't looking at the obvious, which is that something new in terms of stories can be generated by it. Instead, we use the advances in technology to reproduce and reiterate what we've already seen. I think it's time we catch up with the tools that have been invented."

And what might be the perfect amalgam of elements in the creation of an ideal audio-visual medium? "I see it as a marriage of film and television," Coppola says, "in particular, of *live* television. When I say live television, what I mean is television at its most elemental form, which is multi-camera, live television production. Combine that with 24-track audio production, which is to say, treat the video images that you get that way and be able to bounce them around on your video tracks so that you're treating the video pretty much the way audio is treated in sophisticated record production. Combine that with theatre, with its visual tradition of lighting effects and live action performances. Then add cinema with its great tradition of camera angles and editing. Take all of those mediums and put them into one super medium – super television." △

Ric Gentry is a regular contributor to these pages.

Robots on Rampage in Shopping Mall!

by Allen D. Lowell

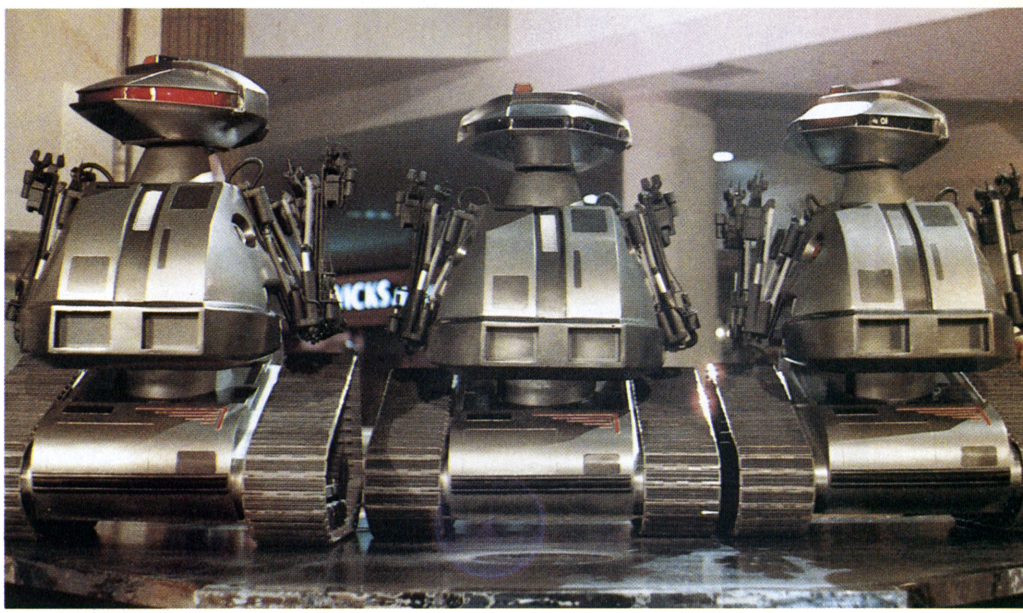
While robots are not new to cinema, they have never enjoyed the mass attention that they now receive. About a dozen films currently feature robots as central characters and some of these characters can cost as much as $250,000 each to construct.

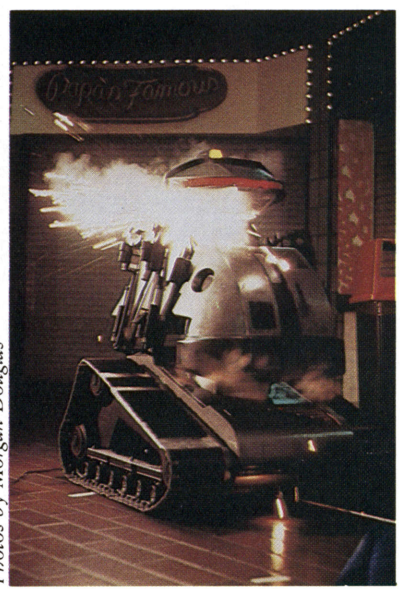
This was the problem faced by Robert Short and his crew on the new film *Killbots* from Trinity Pictures. Short explained that, "I was having lunch when I ran into Jim Wynorski (director) and Steve Mitchell. They said they were writing a film about killer robots. They were looking for designers who could give them ideas from their premise, a three and a half foot tall, fully remote controlled robot with no possibility of a person being inside – and treads, they wanted treads like a Sherman tank."

It was August 1985 before the actual work started. This left only three months until shooting began. Short's original sketch guided Mike Novotny and his crew in the construction of several ¼ scale foam mockups. The low, triangular base and body sections were quickly established, and varied little from the sketch, but the head took some time and experimentation. Short said, "The first head design had no personality – it was simply a box. In developing a new style, 80% had either no character or had a whimsical feel. The more insect-like we got the more malevolent the head became. In the transition from sketch to foam the basic evil element came into being. The asymmetrical visor captured the evil essence." This menacing appearance was further enhanced on the final product as described by Short: "The outside visor was smoke grey plastic which gave a dark menacing look, and when the lights were on, the red gels created an angry, vengeful mood.

"We worked for a balance between design for design's sake and what a real life robot might look like. For example, my sketch had the larger drive wheels in line with the smaller bogey wheels, which were on the ground. We discovered from a tank engineer that a tank's drive wheels are above ground and take no weight. They supply power and tension while the bogeys hold the weight. We incorporated this into our design."

After the approval of a miniature mockup, Douglas Turner carved a full sized, (40-inch high, 35-inch wide) foam version which, after more revisions, guided the sculpturing of the final patterns in plaster and clay. While sculptor/plasterer Dave Schwartz sculpted the final patterns and made silicon molds, David Vivian wrestled with mechanicals and electronics to make the robots operate. Working with his brother John, Vivian utilized as many off-the-shelf items as possible; the drive mechanism was powered by two electric wheel chair motors, the drive wheels were from a conveyor belt system, and the suspension was roller skate wheels and trucks.

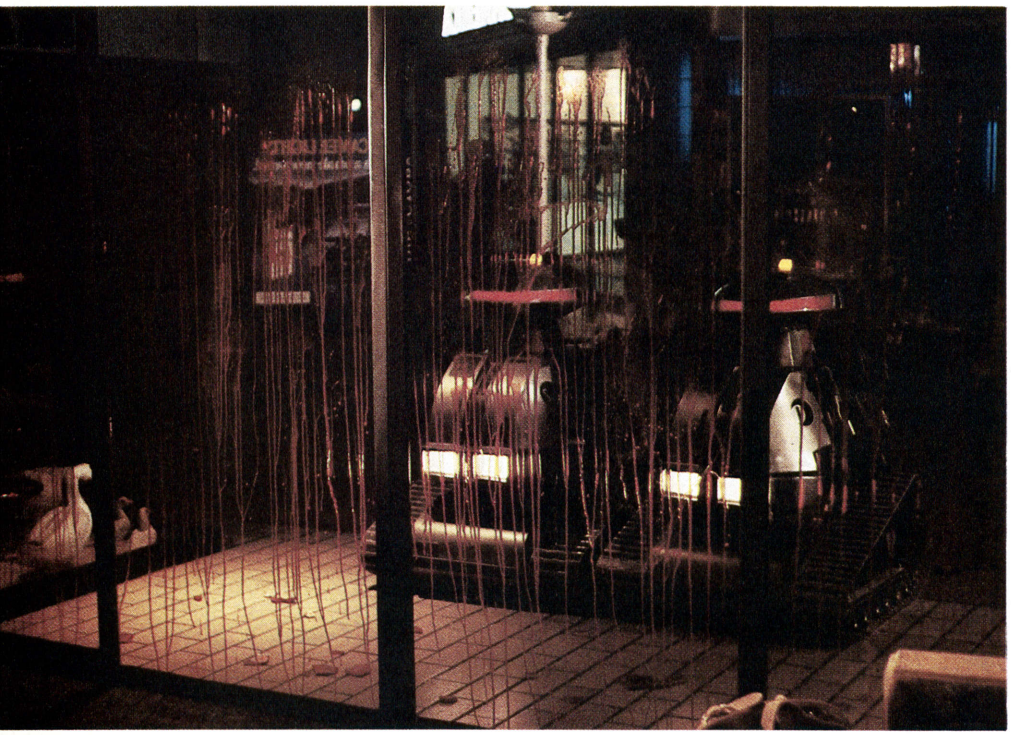




Photos by Morgan Douglas

Above: ***Three robots with insect-like heads are responsible for the mayhem in*** **Killbots.** **Left:** ***Pyrotechnics add to the action.***

Produced by Steve Mitchell
Directed by Jim Wynorski
Photographed by Tom Richmond



Above: ***Two robots "act" together in this scene. The one at left is radio controlled, the other is cable operated.***
Left: ***Stuntman Tim Trella takes a high fall from a shopping mall balcony.***

"The biggest godsend was the discovery of pre-made robot tread, nothing more than food conveyor belts," recalled Short. "We added applications of rubber strip to give a more menacing look." Other off-the-shelf mechanisms included lazy susans in the trunk and neck turn mechanisms, and drawer slides in the front arm extension. One off-the-shelf item backfired, however. "Our buyer found a sub-miniature linear actuator which turned out to be perfect to motivate the arms. Then we found out that it was a new product; they hadn't manufactured it yet. There were only about 12 ever made and they were sent out as samples across the U.S." By the time this was discovered all of the R. & D. time had been exhausted and the arms already built to fit the actuator. After many phone calls and much pleading, the rest of the actuators were tracked down a week before delivery.

By the time the major patterns and silicon molds were finished, many of the accessories such as grappling hooks and tasers were completed. Rob White did most of the fiberglass work with the help of Turner and Luc Mayrand. Don Matheson was busy casting smaller parts in polyurethane while Cathy Quill made up dummy arms for the shell robots.

"Many of the electric-mechanical parts were never meshed with the fiberglass shell units until we did the final assembly," said Turner. "Our first real test was held in front of the producer and director on a Saturday morning after we'd worked all night to get it ready. It's the worst feeling in the world to test things in front of an audience.

"Once the late nights at the Marina Del Rey shop were complete, the robots were transported to the Sherman Oaks (Calif.) Galleria, where most of the principal photography was to take place. We never had time to practice with the robots before moving them to the location. We literally learned how to operate them while we were shooting."

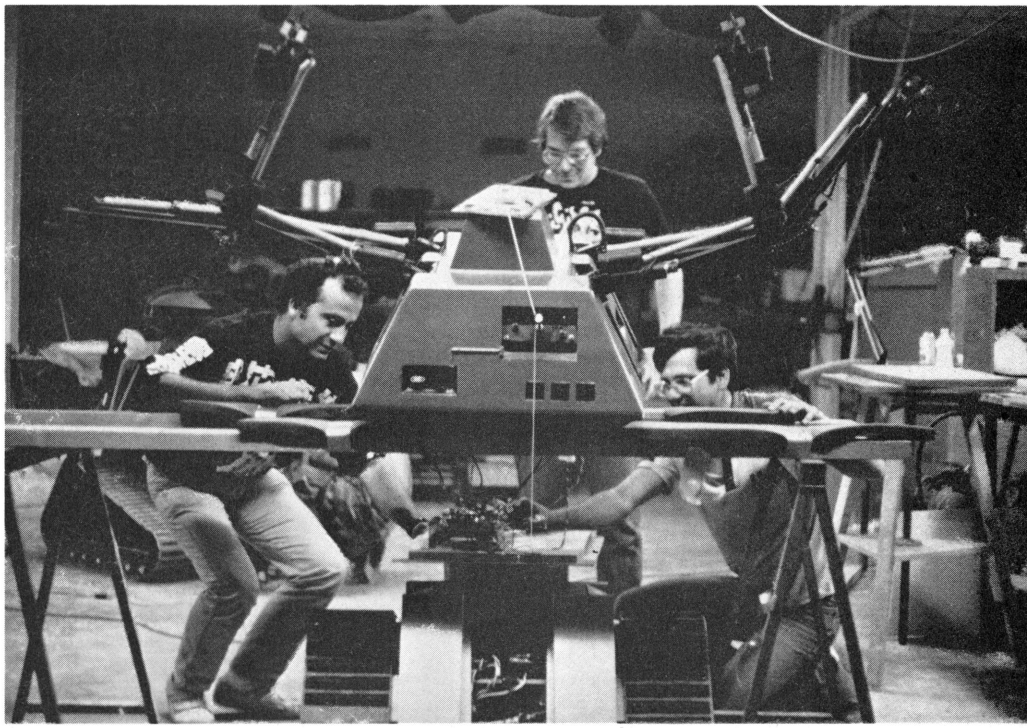
"The galleria is the best possible location for shooting low budget," explained director of photography Tom Richmond. "I got a good feel for shopping malls when I was shooting second unit for *Night of the Comet*. We tried to enhance the environment and work with what was already there, instead of

trying to be creative geniuses. We didn't want to make it like a haunted house; we wanted to see the place, but just barely. We took advantage of the store fronts with all their little source lights. We didn't go for a lot of big shadows, but it had to be dark and scary enough that you didn't know if there was a robot back there.

"Once we set up the basic light, filling the place with a sort of no-color blue at a very low level, as a neutral, colorless look, and with highlights from all the stores, it became fairly easy to light a huge area. Then, depending on whether it was people or what, we'd go for a key or an edge that seemed to fit the scene. We could get a bunch of shots relatively quickly. Because of this consistency, we could get away with a weird edge or something dramatic because it was still within the bigger visual continuity.

"We were working with fairly low light levels in there. We shot most of the time on a 2.8/4 split, and used a lot of wide angle lenses which enabled us to be pretty fluid and wild in our photography. The camera moves a lot. Having flat floors and a really good, imaginative dolly grip enabled us to move the camera fast and do fairly elaborate chase shots without massive amounts of setup time. We didn't have a Steadicam or thousands of feet of track or a crane. We were able to go flying down those halls with either the kids or the robots.

In all, Short's crew built five robots, and a closeup section of a robot chest, but only two robots were fully functional. Of these, one was radio remote controlled, and other had the same functions but its control box was attached to a 15-foot cable. The other three robots were "stunt" robots which could be positioned or pulled along on cables. They were used for scenes in which the robots crash through windows or get blown up. The radio controlled robot (nicknamed Remo) became the primary work horse with the cable unit (Rambo) as backup. This was planned from the beginning because of the potential problem of radio interference. A 400-lb. robot out of control could cause a lot of damage to equipment, personnel, and, of course, itself. There was also a conveniently located kill switch which would disconnect the transport drives if the robot got out of hand.



***Robert Short, Don Matheson and Douglas Turner assemble one of the stars of* Killbots.**

The cable robot posed its own problems. Whereas the radio operator could work from almost anywhere, the cable control box could be at most, 15 feet away. This led to problems hiding not only the cable, but the robot operator as well. Turner explained, "I had to hide under a black drape beneath a bench for one shot, and for another I had to drive the robot around a blind corner. I ran him right into the camera; luckily we had sandbags there for just that reason."

Turner and White were charged with the responsibility of operating and maintaining the robots during four weeks of shooting in which the robots worked every night. White became the primary driver of the remote control robot, while Turner operated the robot's arms or the cable robot. The director soon learned that the robots needed marks and rehearsals just as the actors do, even though they never asked about motivation.

"We were experimenting with lighting the robots all through the film," Richmond recalled. "I found that because they were sort of reflective and had such a nice shape to them that they needed almost no light to light them. I thought it was going to be a problem initially because they were dark. It went against a lot of my disciplines, if I tried to do an edge light or light the body and not the head, it didn't work. It was better to just let them reflect the windows and lit objects. They pick up the smallest lights and throw them right back at the camera. When we did light them, we used a dull blue side light to give them a cold, metallic, industrial look.

"I think it's important not to over-reveal them. It makes them scarier. They're not very big, and you can take them as toy-like if you just saw them sitting there. The idea is that the machine does not have to be big to be powerful. I was hoping to get across the coldness and pure functionalism of the things. Size was not that important because of their power. I wanted to emphasize how insidiously scary they are rather than their size."

The camera was usually low, and often showed only a part of the robot. The camera was frequently undercranked at 16 to 20 frames per second. Several shots were accomplished by mounting both the camera and robot on the Western dolly and rolling them around the mall. Certain shots were particularly effective in showing the robots as free, autonomous beings. Among these were high angle shots of a robot maneuvering in tight areas and one in which the robot rolls into a glass elevator and spins around as the door closes behind him.

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"One of the reasons I got involved in the film was because of the robots," Richmond said. "It was a chance to photograph technology. It was hard for me to give a lot of that over to second unit." Second unit cameraman Steve Carpenter had to match Richmond's style as closely as possible. Since both units were working in the same area, the two of them were able to consult regularly to make sure the look of the film remained consistent. This same luxury did cause problems when both units were scheduled to shoot in the same place at the same time. Second unit often had to stop work while first unit shot a sound sync scene; echoes travel far in a shopping mall. Carpenter kept being pulled away from second unit to run a second camera on stunts or effects sequences. Since the robots were sometimes working on both first and second unit, White and Turner were required to split up. Turner said "Rob took second unit with the remote control unit, while I stayed with the first unit which worked at a much slower pace. But, having only one operator did cause problems. In one shot, on cue, the robot's lights come on, he rolls forward to a mark, raises one arm then the other, and turns his head. I had to recruit extra help for that one."

There were a number of actions in the script that the robots simply could not perform. "We had to cheat these," explained Turner, "for delicate arm movements such as when it grabs someone's throat or picks up a fire extinguisher and throws it, we used a separate mechanical arm with a bicycle hand brake to work the claw. In another sequence, an overturned robot was supposed to push itself upright by its arms. We loosened the arms on one of the stunt robots so that they would rest on the floor, then Rob and I simply grabbed onto the treads and pulled it up. We cut to a medium shot of the robot coming to a full upright position." The biggest "cheat," however, was the escalator sequence. When the robots were designed, the film was supposed to be shot at the Beverly Center in Los Angeles, which has very wide escalators; the galleria doesn't. The robots were several inches too wide. To make matters worse, the sides of the escalator are transparent. "For our final solution, we took the head and body off one of

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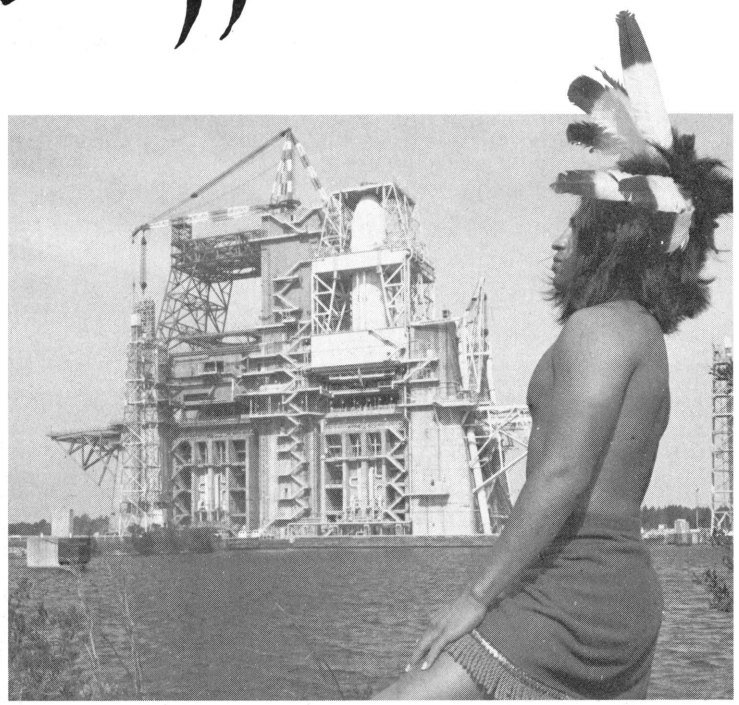

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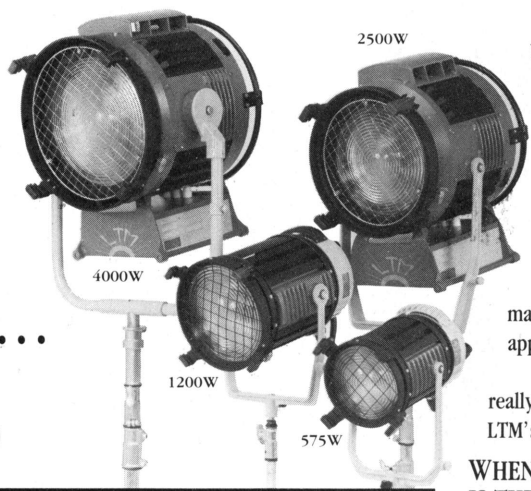

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the stunt robots and wearing the robot like a costume, I sat on the escalator. I couldn't see, so Rob had to lead me on, then come in and pull me off before the escalator hit bottom," Turner added. "They accomplished two shots this way; one over the robot's shoulder, and the other of the robot coming up over the horizon."

"Halfway through the film I started to fall in love with the robots," recalls Richmond. "They really developed their own characters and performed better and better as the shoot went on. I was impressed with the durability of the things. Working the robot twelve hours a day for four weeks, I was always afraid they would break down and have to be rebuilt."

The robots held up well during the weeks of shooting, and were only taken apart once for maintenance. There was virtually no down time. There was, however one accident in which a robot ran into the bottom of the escalator. It broke its head off and smashed one of its claws. It was quite a spectacular shot because a small explosive pellet hit the head in the same instant. An attempt was made to rewrite the picture so they could use the shot, but it wasn't possible. The robot crew lost some sleep that day trying to repair the 'bot for the next night's shoot.

The most time-consuming maintenance turned out to be changing treads all the time. The original design involved a hard plastic tread with a thick rubber strip on each section. This worked very well when the aluminum chassis was tested in the shop. However, with the fiberglass body sections and the upper body mechanics placed on top, the treads got too much traction; the maneuverability was reduced. On carpet the robot would scarcely turn at all. Two of the stunt robots had been outfitted with the same tread but with tape strips instead of thick rubber. The result was not as pretty, but more functional. After a few nights' shooting, a decision was made to use the "hero" treads whenever the robot was stopped and the others when they were traveling.

"There was a certain satisfaction to watching one of them caught in the great fire at the end," Turner recalled. "It was one of the robot dummies of course, but we tied the arms in the upright position with monofilament so that they would drop when the line melted. The head fell off slightly too, which gave it a very dead look."

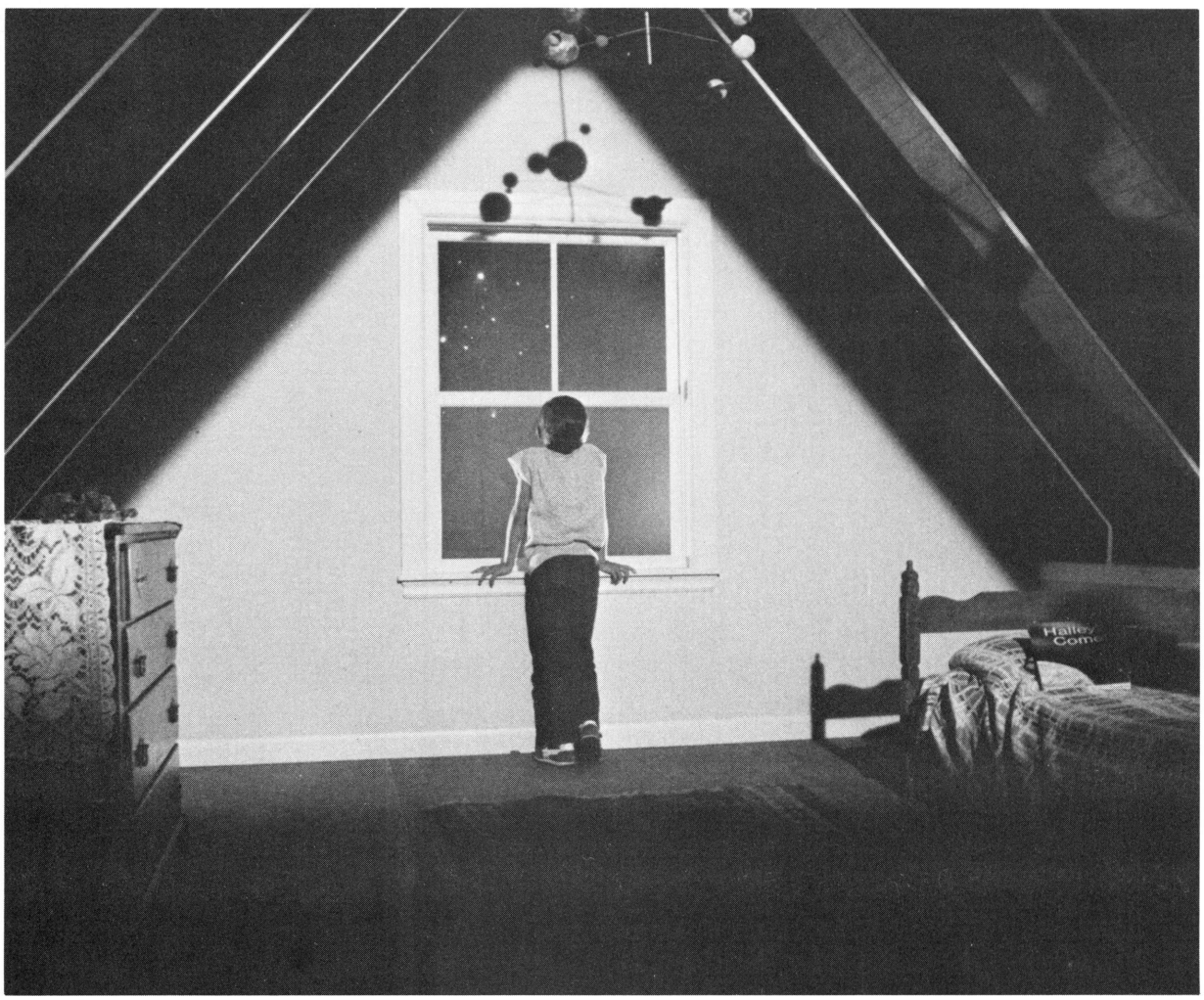
"My favorite shot of the fire was with a 135mm lens, close up on the robot." Richmond said. "We shot at 60 fps, with the robot engulfed in flames." "Flames in the daytime always look great – they always look like flames, but at night you're lighting normally at a 2.8 or something like that. The flames are at 5.6, 8, or 11; they're really bright. So in order for them to come out orange, you have to light at a higher level. Otherwise the explosions just come out white."

Whether or not *Killbots* is remembered as a film, robot fans undoubtedly will remember its robots with fondness and picture them along with Robbie and Gort in the annals of robot history. △

(Allen D. Lowell is a scupltor and model maker in Hollywood.)

High Definition Transfers to 35mm

by Susan Levin

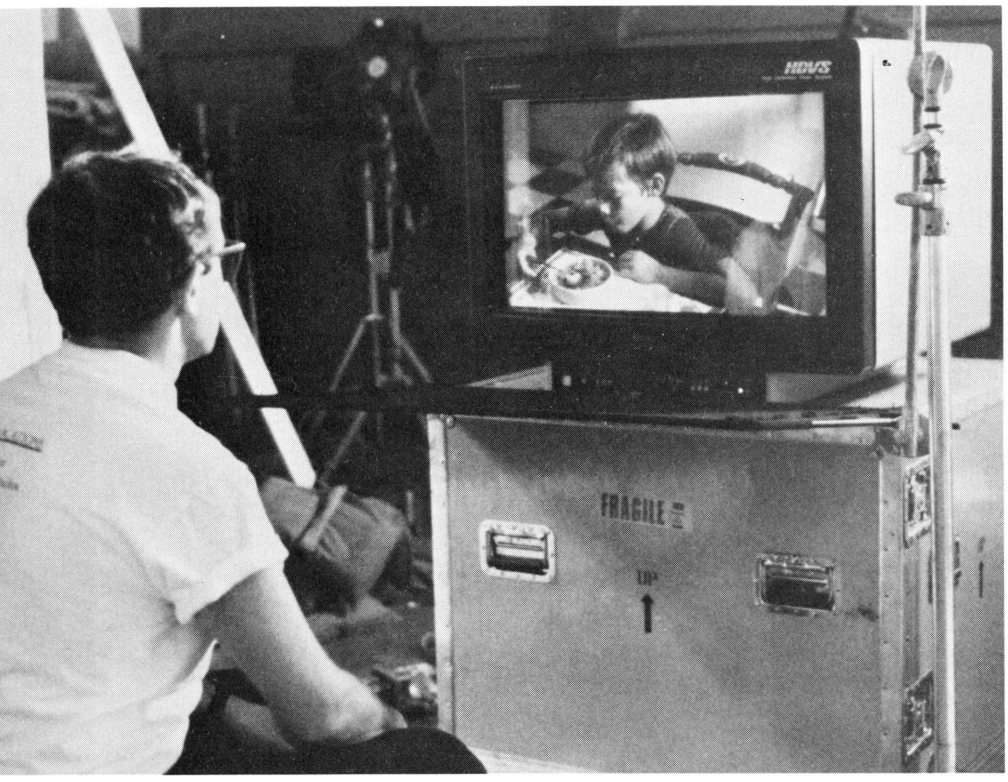


Gabriel Damon in opening scene of* Arrival *as he awaits the coming of Halley's Comet.

The American Film Institute, (AFI), a long-time proponent of research and experimentation into new technologies, recently tested the application of high definition video system in a five-minute short, *Arrival.* Being one of only two projects ever shot and edited entirely on HDTV, *Arrival* proved a valuable testing ground for further improvements into the currently available hardware. With a grant from Proctor & Gamble, and equipment supplied by the Sony Corporation, *Arrival*'s tour de force was formed. AFI's Victoria Costello was appointed producer of the project, with Keith Williams as writer/director, Joe Dante supervising director, and John Hora, ASC, as cinematographer.

Because no one on this team had worked with the medium before, (shot on Sony's HDVS system), the experiment proved a valuable source of dialogue between the film/video community and the HDTV equipment manufacturers. Corey Carbonara, product manager for the Sony Broadcast high definition system, sums it up, "We were very pleased to work on this project with the AFI – to not only look at picture quality but have a working dialogue with cinema . . . to see what it was like working with HDTV. We became educated as to what would become necessary."

When a project as experimental as *Arrival* goes into production, the talents of many professionals are put to the test. This five minute piece, concerning a young boy's expectation of Halley's comet, was inherently influ-



Director Keith Williams spot checks scene from* Arrival *shot on Sony high definition video system.

enced by its producer and director. But it was the eye of the cinematographer that most directly affected the picture's outcome. In a situation such as that of *Arrival*, it is difficult to upstage new technology. But the work of John Hora did make its mark. Credited with such previous films as *Gremlins* and *Explorers,* Hora's expertise in lighting and photography gave the look of *Arrival* an atmosphere of tension and anticipation necessitated by the script.

While Hora noted the aura of excitement associated with the technology, he did find room for constructive criticism. Admitting to the prototype stage of the HDTV equipment, he revealed a few weaknesses he felt could easily be remedied by manufacturers concerned with integrating their equipment efficiently into the Hollywood community.

"First of all, it's built too much like an ENG (electronic newsgathering) camera," Hora said. In this, he made reference to such items as lenses, viewfinders, lighting limitations, and camera movements. "It, (the HDVS camera) requires a lot more light. Even if it was on ASA 70, that's still way below what you'd expect to use on a stage for motion pictures . . . which is generally now 320 or 400 speed." He continued, "The other thing that I feel is missing is any ability to run at other than real time (30 video frames per second and 24 film frames per second) – which is done fairly often – at least in the kind of work I've been doing, if you wanted to zoom in on something, give a real snap to it, a lot of times you can shoot it at 12 or 16 frames per second and it gives the move almost animation-like precision, at normal human speed. You can't do any of that with this. It's just locked in to go at real time and be reproduced at real time – without going through some film process."

Commenting further on the system, Hora added, "These are things inherent to the way the system's set up right now, that would be limitations to it. The rest is mostly packaging. If a studio said they wanted to build a tape system for producing films, they would have made a camera with a wide range of usable lenses. Normally, you can expect to have 40 to 50 lenses available to you."

"The best thing they can do," Hora said, "is re-design an optical system a little like what Panavision did with their Panacam, where you can use standard motion picture lenses in a BMC mount – which is a world standard . . . and use those optics."

For Sony, such feedback is immeasurable and will be incorporated into next-generation equipment . . . further tightening the relationship between film and video. Hora admits, "I think you could shoot on this (HDTV) and cut it into a movie. I don't think anybody would normally catch on. And it looks to me like you could shoot on film, go to this system to do an Ultimatte composite, then go back to film and get away with that. A major advantage is the electronic compositing – which the Ultimatte does very successfully. But as far as doing something with 65 different elements, then that's a different problem.

The Ultimatte to which Hora refers, is a special blue screen designed to create on-the-spot matte shots uniquely for HDTV. *Arrival*'s call for Halley's comet and various other galactical items, put the Ultimatte to good use. The major drawback to its immediacy is the human error. "There's not enough time to ever change your mind," Hora comments.

Today, applications of HDTV include a wider range of functions than just film. Closed circuit TV makes use of the medium through simulation, electronic publishing, teleconferencing, high quality visual data storage and retrieval, to name just a few. However, with the current excitement building around such new film technologies as Showscan, (70mm film projected at 60 frames per second), high definition could play a major role in integrating film and video. In a paper delivered at the Japan Symposium in September of 1985, Douglas Trumbull, creator of Showscan, discussed the potential of HDTV, ". . . in terms of the future, I see High Vision (HDTV) as vital to the worldwide standard of distribution of entertainment. However, in order to utilize the full potential of High Vision, it will be necessary to provide a high definition image source. The finest possible source would be 70mm film photographed at 60 frames per second. The ideal future relationship between High Vision and film suggests an identical aspect ratio, and identical frame rate and field rate, and a photographic and post-production technology that is as compatible as possible."

The identical ratio and rates to which Trumbull refers, reflects the heated topic of debate currently stirring around HDTV . . . should there be a world standard? In October of '85, a CCIR (world broadcast standards organization) meeting was held in Geneva to discuss the acceptance of an international standard for HDTV – 1125 lines with 60 fields double interlaced, 30 hz frame frequencies, 5:33 to 3 aspect ratio and a video bandwidth of 30 mhz. While the actual vote was put off until May of '86, the pros and cons of such an acceptance rage on throughout the production community. After working with HDTV on *Arrival,* Hora discussed the topic, arguing against the acceptance of a standard. He believes there are so many new technologies being developed every day that to establish a single standard would be pointless . . . "digital would open up a whole new thing." Also, after discussing the subject with a number of friends in the field, Hora agreed, "Our current 'low definition' standards were called 'high definition' when they were finalized in 1941, before World War II. After the war there were several attempts to go to a wider band-width, color standard but the manufacturing interests applied enough pressure to freeze us at the pre-war level of quality. That was 45 years ago. I would hate to see us saddled with another standard that may seem good enough today but may curtail real advances for the next 50 years!"

Manufacturers disagree with Hora's interpretation of what a world standard would mean for HDTV technology. It is clear they see a standard as providing further opportunities for both the film and video mediums. In fact, according to Carbonara, Sony has been an active member of the SMPTE HDTV working group as well as the ATSC national committee, pushing for the acceptance of such a standard.

In general, television standards have had a longer life than the equipment built for their operation. Therefore, Hora's point is valid, as there are likely to be important advances in the technology used for signal origination, distribution, and display. However, to others, the benefits far outweigh the disadvantages. Trumbull's comments at the Japanese Symposium reflect such optimism:

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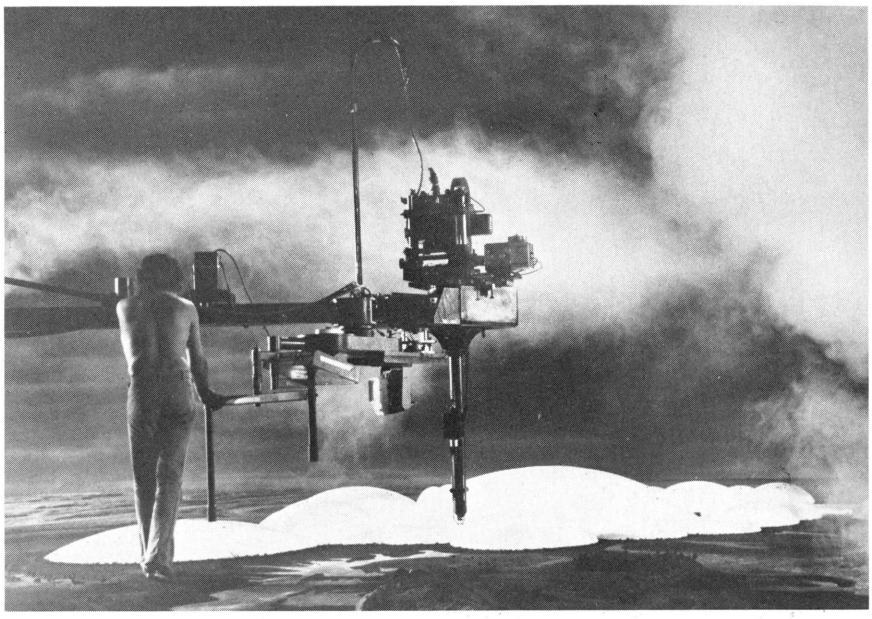

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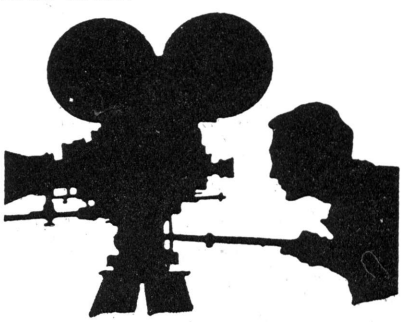
"In my opinion, High Definition Television, with a standard of 1125 lines with 60 fields double interlaced, is an inevitability. The opportunities are staggering. Present television standards, and their attendant low cost, ease of operation, and immediacy, have all but eliminated Super-8 and 16mm film as viable formats. I believe that High Definition Television will seriously compete with, if not eliminate, 35mm film and even the present 70mm release formats. The factors that contribute to my conclusion are obvious, although you may not agree."

The one thing all can agree on is that as far as the consumer is concerned, it will be a long time before HDTV will reach their homes. Even if a world standard is accepted, there remains the difficulties of broadcast. It is not technically feasible to broadcast HDTV, whose information rate is several times larger than that of current television, on the same channels, and it would be very difficult to deliver on cable. A direct-satellite feed could be used, but the costs for the equipment involved would ultimately prove prohibitive to the average consumer.

More than likely, consumers will see HDTV in their theaters long before they ever will in their living rooms. As of January, *Arrival* was scheduled to debut in 2500 theaters nationwide. All parties involved were excited at that prospect, which would provide those interested with yet more feedback. △

Susan Levin is a Los Angeles freelance writer.



Things to Come . . .

In the future lies a story about *Star Trek IV, the Voyage Home.* Don Peterman, ASC, is the cinematographer and ILM at San Rafael is the crew involved with the magical effects of life in space.

Steadicam Do's and Don'ts

by Marianne Lucchesi

"When you're running Steadicam, you're everything . . . you're the crane, you're the dolly, you're the vehicle moving . . . you're all those things, plus you're the camera operator. And when it all comes together and you're in balance, it's magical . . . you can do so many things.

"However, if you don't like angst in your life, Steadicam is not the area to specialize in . . ."

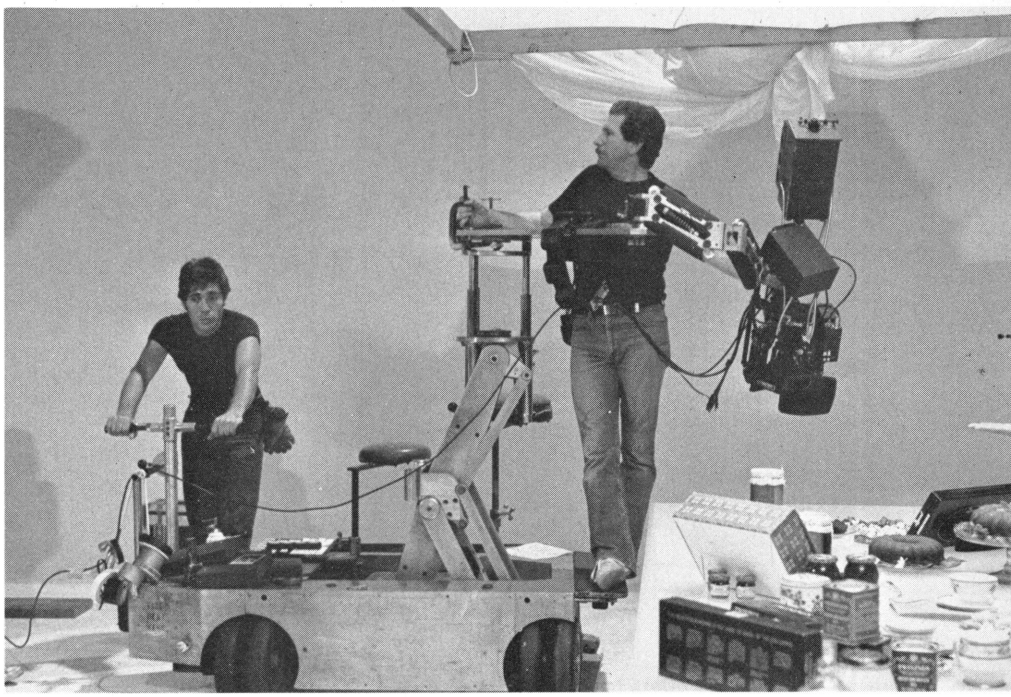
The words are coming from Marty Collins, veteran Steadicam operator and instructor. As he speaks it's hard to imagine anything bringing angst to this man . . . the voice is low and calm, the anecdotes he uses to illustrate his points impressive. At just shy of 5'8" his height is not imposing, yet powerful shoulders bespeak the diver and gymnast he once was.

Those shoulders, now kept strong by surfing and weight-training, also receive frequent workouts in one of the San Francisco Bay Area's most often-used Steadicam rigs. Collins, cofounder of San Jose's Darnell/Collins Productions, has put in over five years of Steadicam operation. His training came at Garrett Brown's first workshop in Rockport, Maine, and he has since helmed the instruction himself at seminars in Lake Tahoe, Calif.

He is currently preparing to head up a course for San Jose area producers on "How To Buy Steadicam." Collins hastens to point out, however, that this will not be a primer in how-Steadicam-works:

"When someone is willing to pay $500 to $1500 per day for an operator, plus $250 to $350 per day for equipment, that person will probably have some idea of how the technology functions. I'm just trying to make producers aware of what Steadicam's limitations are, and what they can realistically expect when the shoot is over." Caveat emptor, indeed.

Collins' first precept would seem the most obvious: hire a qualified operator. In most cases, that means a Steadicam owner. As Collins asserted, rental facilities frequently sponsor mini-seminars in Steadicam operation. But the chances are good that someone investing as much as $40K in a rig will have heavy incentive to learn as much about its technology as possible.



Steadicam and accompanying equipment.

And, Collins adds, that owner/operator will have an ongoing opportunity to trouble-shoot and work out with his/her rig . . . an important consideration for someone who needs to carry weights of up to 70 pounds for long periods of time.

Next Collins advises an "intimate" relationship between director and Steadicam operator, both before and during the shoot. Having the director of photography in on the planning is also imperative.

Collins recommends an initial consultation on the Steadicam work. While he's not in the habit of talking producers out of his services, he is honest about Steadicam's uses and limitations. Occasionally asked by corporate video producers to follow the company president up to a podium and then lock down for a page of dialogue, Collins will cheerfully suggest a dolly move. But he notes that point-of-view, low-mode, traveling perspectives and other "gourmet" shots are what make the Steadicam really shine.

In "Fast Forward," a 4½-minute piece currently on display at the Oakland Museum, viewers are treated to a rapid-fire look at the superb assortment of vegetation and terrain occupying northeastern California. Collins was tapped by director/producer Trip Gruver to pick up where cinematographer Tom Tucker's aerials left off: flying over river beds, rock formations and assorted geographical configurations.

For "Forward," Collins used a technique similar to Garrett Brown's speed-bike sequences in *Return of the Jedi* (minus the two gyros mounted on the rig). With the Steadicam in low mode and the GSMO/ARRI lens approx-

Collins in rodeo ring, dancing with singer Cherida.

imately six inches from the ground, Collins ran full out while shooting at 4 fps . . . no small trick at an altitude of 11,000 feet! Steadicam footage was later intercut with the aerials, making one seemingly continuous sweep over the rugged terrain.

Collins notes that the resulting visuals proved fairly successful, as "Forward" later won a pair of Emmy awards.

He also learned an invaluable technique for future outdoor shoots. When the Sierras' strong winds conspired to toss his rig this way and that, he found the protection of normal foam core shields useless. But, he wryly reports, going against his prior training he discovered he could run directly into the wind or keep it constantly at his back, thereby 'muscling' the shot. Such a remedy proved extremely handy throughout the six-day shoot.

Collins also extends a word of caution for high-altitude projects: don't expect a long shooting schedule the first day out. The normal need to acclimate oneself to thinner air is exacerbated by the weight of a Steadicam rig. For even the most physically fit shooter, a day to get used to the rarefied environment is definitely a plus.

Collins is frequently asked to lend a hand when a script calls for a traveling point-of-view shot. His assignments have variously called for him to portray a woman going into labor, an orangutan, a rodeo singer, and the "husband" sharing the bed of Rae Dawn Chong, among others. Each has been a learning experience for any would-be Steadicam operator.

On the made-for-television movie *A Summer To Remember,* Collins photographed the POV of the two leads: an orangutan and the deaf child who taught him to sign. His first made-for-TV gig, "Summer" was also Collins' proverbial baptism by fire. "When I arrived in Oregon for the shoot, the director had already gone through two DP's and two Steadicam operators, and they'd been shooting for a month. As time wore on, I just knew my whole career was going right out the window."

Bringing his own rig, he looked forward to relaxed prep time with the crew's camera equipment. But with said items arriving 20 minutes before he was due to shoot and an impatient director demanding immediate action, Collins unfortunately discovered mechanical problems.

The first shot called for Collins to run in front of the child through a carnival midway, capturing his confusion as he searches for the orangutan. From within the camera truck Collins discerned that a lens motor was malfunctioning, yet time had run out to prolong preparations. Collins credits assistant cameraman Mark Karen with helping save the day:

"We had to calculate depth of field and try to hold the kid in focus without pulling focus and following focus. Using the right lens we worked so we had depth of field so we could carry him, and we just ran like hell through the crowd while keeping him at the same focal distance from the camera."

Collins cautions producers, directors and directors of photography to allow Steadicam operators sufficient time to balance their rig to the camera system and the shot beforehand. "People assume it will take you forever to get set up for a Steadicam shot," he said. "Not true. An experienced operator will continuously be tricking his or her rig out . . . making it as light and efficient as possible. With the proper prep time the operator can begin shooting as soon as he or she arrives on the set. Then it's just a matter of trimming the camera to the shot."

Collins also discounts the supposition that Steadicam operators are only good for a short period of time. "It's a matter of common sense. If you've just finished a tough shot where you've been running uphill, stop and rest a few minutes before the next take. Your legs in particular can tire very easily.

"But with proper conditioning, you can put in six to eight, or even ten hours at a stretch." He notes that he steps up his work-outs before a Steadicam shoot, often donning sweats and using the rig itself for weight training.

Collins often suggests Steadicam in instances where time and convenience are significant factors. For example, on the multi-award winning "Time of Trial," made-for-television on medical malpractice and pre-natal care, director Robert Zagone needed a shoping center location for one of the film's pivotal scenes. Management personnel of the mall selected had proved less than cooperative, insisting that the large cast and crew maintain a very low profile.

With the company forbidden to bring in anything more than could be carried, laying track, etc. became impossible. But with Collins in his Steadicam rig, the scene was accomplished with minimal disruption. In short order he was able to make a 110-foot dolly shot ending in a 290-degree circle around one of the female leads, then move in close to her face for dramatic footage as "labor" began.

Such a convenience factor is particularly important with Collins' Silicon Valley clients. In areas where the amount of allowable dust is measured in millionths of particles, trucking in vast quantities of equipment is inconceivable. And, if one is lucky enough to gain access to a clean-room environment, one is careful not to damage one's welcome. Again, Steadicam can provide a viable alternative where time and space are issues.

For the industrial project "Quest For Perfection," Collins and partner Larry Darnell were shooting a tour of Ultratech Photomask's facility. The company's plus-ten clean-room environment necessitated minimal set-up, and its yellow and red lighting warranted special consideration. With an Arriflex-3 with FL-D filter mounted on his rig, Collins was able to quickly capture all footage needed of the photomask manufacturing process.

In addition to a number of other national awards, "Quest" even-

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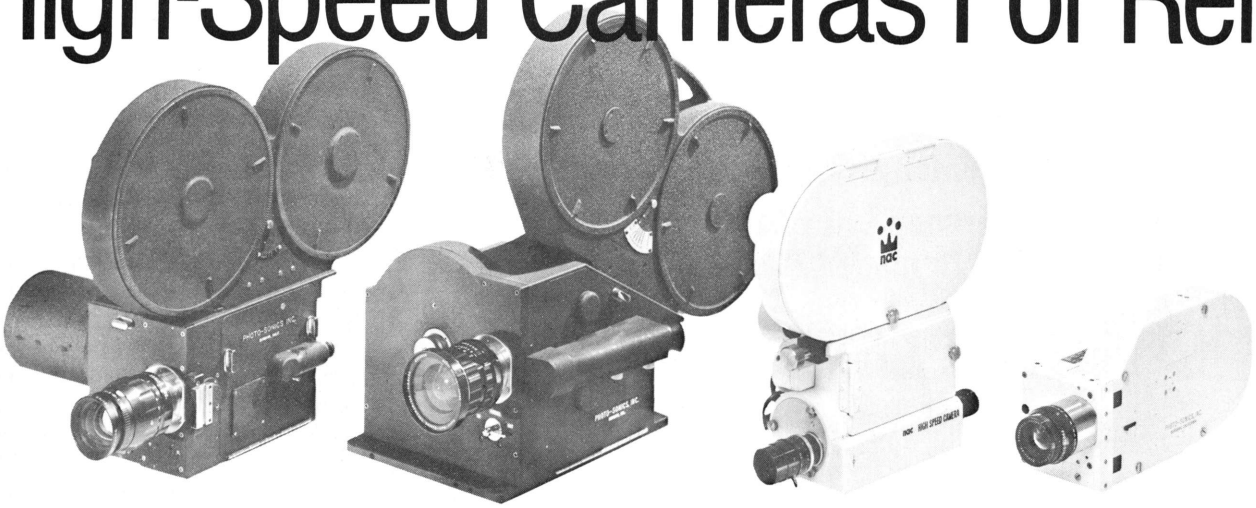

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tually also garnered the International Television Association's two highest honors in 1985: the Golden Reel of Excellence, and a special citation for Most Creative Use Of The Medium.

All well and good, but what if a producer has made the investment in a Steadicam operator, and the results are . . . underwhelming? Collins recommends a couple of safeguards prior to and during the shoot.

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Even in the case of a veteran operator, Collins relates, it's often better to mount the rig on a moving vehicle for the best shot. His set-up has at times been placed on a wheel chair, a golf cart, out the back of a van and in the cockpit of a sailboat cruising over San Francisco Bay. Despite such seemingly uncontrolled circumstances, a well-balanced Steadicam's ability to find the horizon and center of gravity will still guarantee a smooth, liquid shot in the hands of an experienced operator.

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Marianne Lucchesi is a San Francisco writer.

Theme Park Movie Challenges Cinematographer

By Steve Schklair

Scene from 1900 as depicted for Six Flags theme park. 3-D camera crew at work.

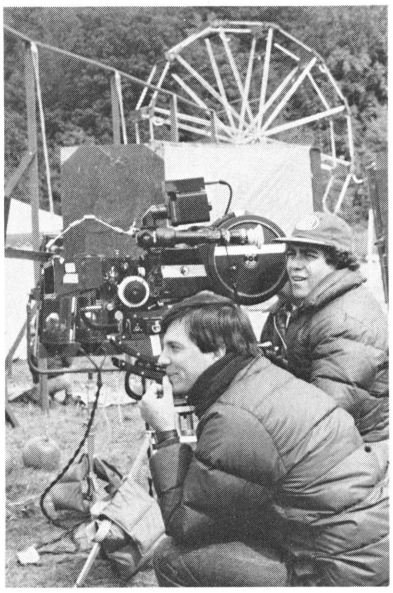
During the spring of 1984, Infinity Filmworks was approached by Gary Goddard of Landmark Entertainment with an idea for a unique project. Landmark was renovating a turn-of-the-century power plant in Baltimore into a Victorian theme park for the Six Flags Corporation. One of the attractions was to be a new 3-D film.

The film would be designed for showing in one location only, with a few unique twists added to the idea. The film would incorporate a multiple track discrete sound system, "bodysonic" seats, and "Scent-a-Vision" (a series of "smells" released in sync with the picture). The script was "a turn of the century trip through American pastimes," and contained several large scenes involving more than 100 costumed extras and dancers, with all the period props necessary to complete the spectacle.

"The clincher," said Goddard, "is that the film has to be produced for under $500,000." As co-producer, with my partner/director Keith Melton, making this a memorable film on that budget seemed like an impossible task. As the director of photography, however, I was in the lucky position of not only shooting my first 3-D film, but was also able to consult on the building of the theater in which it would be screened

During the final script revisions, I had to test and select the camera system which we would use. To stay within the budget allotment, some "process of elimination" decisions had to be made before any test footage was actually rolled. Initially, all single and dual 65mm systems were eliminated because of the costs involved in using such a large format. I gained tremendous amounts of inexpensive information by reading through all of the past articles on 3-D in *American* Cinematographer, (of which there was a

Baseball, all-American game, was part of the theme recorded in 3-D.
Below: Schklair and Melton on set.



surprising quantity). Jim Contner, for *JAWS 3-D,* had done some extensive testing of 3-D systems on a studio budget. I spoke with him hoping to gain some knowledge from his experience. Jim was very helpful, and the field was narrowed down to two systems. Arrivision, the over/under system from Arriflex, was finally chosen because of its acceptable optics and cost effectiveness; and also because it was "user friendly" (borrowing a phrase from the electronics age). The Arri system required very little extra set up time; and the design made it easy for my first assistant to make the transition from 2-D to 3-D.

Another plus for the Arri camera was a cam assembly which automatically made convergence adjustments as the focus was changed. A drawback to this system, which was more of an editorial problem than anything else, was the difficulty in differentiating between the frame line and the "septum" (the space separating the top and bottom image on a single frame of the exposed film). If the relationship of the over/under frames was not kept constant from edit to edit, projection of dailies and cut workprint could become a painful experience with the left and right images screened in reverse. Also, the editor needed a very visible delineation between the frame line and the septum to avoid having to examine each cut under a magnifying glass in order to keep all cuts on the frame lines. Arriflex solved the problem by cutting a set of notches into the gate just above and below the metal bar welded across the center of the aperture. Another modification made for us was to cut an extra filter slot in a large lens hood, enabling it to hold a set of filters large enough to cover both elements of the front lens.

There are many conventions in the language of film which audiences have grown to accept. An example of this is using a shade of blue over lighting instruments to simulate moonlight, or using a fade out/fade in to show passage of time. Sometimes these conventions work very well, other times the same effects can be achieved using more original methods. A significant problem in shooting 3-D, is that the obvious conventions of a period film (diffusion filters and long lenses) are contrary to achieving the best three dimensional effect.

The accepted technique of 3-D filming is to keep the image as clear as possible (no diffusion filters), and in focus. The compression of long lenses also opposes the 3-D look in which foreground to background distortion is desirable. After testing the new diffusion filters, which Harrison & Harrison had made for us, we decided that these filters didn't affect the perception of three dimensionality as much as we had been led to believe. This was an acceptable starting point, although the filtration still had to be used with some restraint. The rest of the "period look" was then left up to Arlene Alen, the art director, who helped achieve a good look with her careful attention to color.

The Arri 3-D system comes with four lenses, 18mm, 32mm, 50mm, and 85mm. The 18-50mm lenses all work from a Zeiss 50mm lens with a PL mount, using special diopters placed in the lens hood to convert the 50 to the other lengths. As production commenced, we had with us a stereographer from Arriflex by the name of Stan Loth. Stan is a unique and wonderful man, and he did a very comprehensive job toward training Vance Piper (the first assistant), and myself. He did such a thorough job, that after the first week of shooting, Vance and I did our own stereography and Stan went back to Arri to help relieve the pressure on the budget. I must confess that I did call him up a few times to get answers to specific questions and, as always, he was very glad to be of assistance.

The only rule we followed during shooting is that there are no hard and fast rules. Setting the convergence must be considered on a shot by shot basis. Some of the considerations involved in making these settings are: the size and movement of the action, the strength and quantity of vertical lines in the frame, the distance to the background, and the contrast between the background and the foreground.

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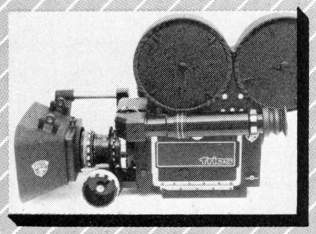
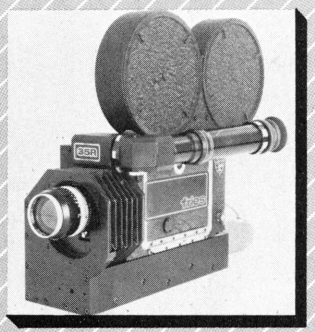


35R Beamsplitter reflex conversion to the Mitchell Std./ High Speed camera. Features include interchangeable lensmounts, film clip viewing, orientable viewfinder, video assist, high-speed/crystal/ single-frame motor.



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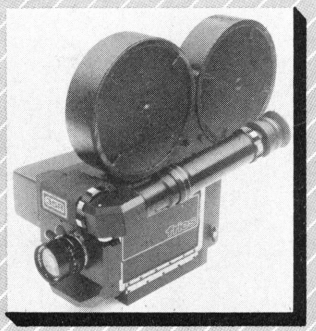
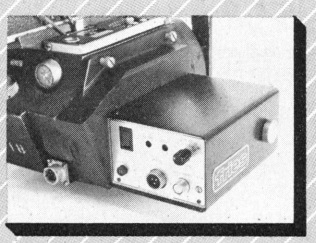


35R3 Rotary mirror reflex conversion to the Mitchell Std./ High Speed camera. Features include interchangeable Arri, BNC-R and Nikon lensmounts, orientable viewfinder, video assist, and a high-speed/crystal motor.



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This film, titled "The Sensorium," was designed for an amusement park where "thrills" are expected. One of the client requirements was to fill a quota of "off-the-screen" effects. Among the items we pulled off the screen were: a trombone slide and a rose in a vaudeville scene, a model of a "Jules Verne" submarine in a laboratory scene, a hot dog in a baseball scene, a tightrope balance pole in a carnival scene, and a fishing pole in a "down-home Mark Twain" scene. In order to pull an item off the screen and into the audience, we needed to place the tip of the object within inches of the lens. This meant that the size of subject matter had to be small enough to place it close to the lens without breaking the edge of the frame, which would destroy the illusion.

Each "off the screen" effect had to be within 7-10 feet if there were strong vertical lines in the background, with the possibility of being further away if they were more neutral. On shots which were not done to achieve an extreme off-screen effect, background distance could still pose a problem. We were often able to work around this by downlighting the background enough to make it stand out less; if that failed, we racked the convergence to make the shot work. This was difficult for Vance, who had to pull focus with his right hand and convergence with his left.

Composing shots in 3-D proved to be another new experience which required a modification of existing techniques. Each half of the image pair, which make up one frame, is only two perfs wide on 35mm film. Thus, the frame has roughly the same aspect ratio as the old Techniscope frame. Shooting a frame this wide was wonderful, but in the 3-D format it has its complications. The view through the finder includes both the right and left eye image, one on top of the other. Framing would have been easier if it were possible to pick just one of the images to work with; however, they are not quite the same. Objects which come close to the lens could be in frame in the top image but slightly out of frame in the bottom image, due to a two and a half inch offset of the lenses. This meant that both sides of each image had to be watched simultaneously while operating.

We tried to frame each shot with at least three planes of depth: foreground, middle, and background. Even though this technique is used in 2-D filmaking as well, it became critical in 3-D. Unless we deliberately tried to pull an object off the screen, I converged the lenses just at or behind the foreground object, with the point of convergence appearing at the screen plane during projection. This helped give the impression that the screen is a large window and the picture would have a beautiful fullness behind this "window".

Another departure from 2-D techniques occurred with lighting, especially on interiors. The primary reason for this was the need to keep tight control over the contrast in the scene. We found that areas of high contrast tended to result in a "ghosting" of the two images when projected. Because the human eye focuses instantaneously, everything in our field of vision appears sharp. To maintain this illusion on the film, I lit to a deeper stop than I usually work at. In some cases this meant using larger instruments than I would normally have chosen to use. We used one of the first 12K HMI's available, and I must thank Wally Mills of Cinemills for providing this lifesaver. During one scene, our main character was extolling the virtues of a drive through the country, while cruising in a 1912 Cadillac through the California redwoods. It's surprisingly dark under those trees, and even though I had to switch to 5294, thanks to that 12K we were at least able to shoot the scene.

During another scene when we were shooting an interior "laboratory" set on black & white stock, we had an effective ASA of 40 because of the green gel I was using behind the lens. We wanted to shoot at a stop of T8, and we wanted to keep the lighting spotty; dealing in distinct areas of light rather than flood the whole set in a giant bath of illumination. Ultimately, we used approximately forty instruments for this small room; the blending of which drove my gaffer, Chris Morley, and me, slightly nuts. Another problem which affects 2-D filming, but which seemed even more accentuated in 3-D, was the absence of "color pop" on overcast days. Somehow, when viewing

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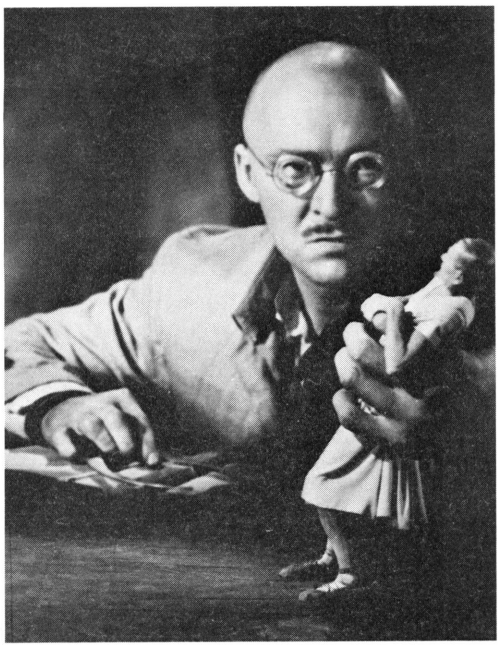

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the processed film, the "pop" and sharpness really made for effective 3-D viewing.

Although we shot many off-screen effects in the field, the most memorable effects were achieved by doing them as opticals. Pulling an object off the screen, which was larger than the opening in the lens hood, had to be done as an optical. We found a wizard of 3-D opticals in the person of Sean Phillips. Without going into too much detail, the basic premise was to photograph the opticals "one eye" at a time. Using a computer controlled down-shooter, Sean would matte out half the frame, shoot a move, program in an offset, and reshoot the other half of the image. This became complicated in optical moves that required up to 20 passes per frame to composite all of the elements.

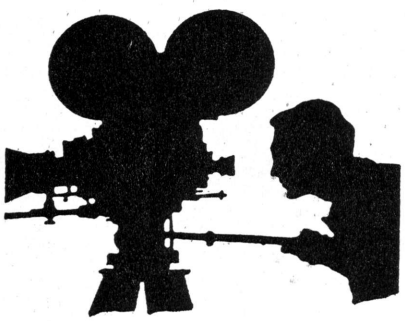
A favorite optical of mine occurred in the baseball scene when the pitcher threw a ball toward the camera. Adding a three axis motion control setup under the crane, Sean had the ball leave the pitcher's hand and in slow motion, rotate towards the audience, "leave the screen plane," and hover spinning out in the middle of the theater. During the screenings it was gratifying to see people in the crowd duck as the ball came out at them. Another optical effect, during the fair sequence, had a magician causing a silver ball to rise and hover over his hat. In a flash of blue light the ball transforms itself into a glowing butterfly which flies back and forth across the screen and out over the audience. To make this effect seem even more real we shot the background plate using a set of lights on a dolly (simulating the movement of the butterfly), which caused the magician's shadow to travel back and forth over the tent wall behind him.

For the release prints, we needed to interlock the film with a 16-track sound playback deck and a computer to control the release of smells; therefore, we used a standard SMPTE time code as the optical track on the prints. This allowed the computer to "follow" the film, even to the point of catching up if frames torn after repeated screenings were spliced out. An optical track is not the best way to store the square wave of the code; but with the addition of special signal conditioners

and code regenerators, the playback system kinks were worked out. CFI laboratories also deserve a mention for their part in the testing and quality control in achieving the correct densities on the optical track.

It was invaluable to fill the screening room during dailies, with as many pairs of eyes as we could pack in, to get feedback on which shots were working and which were not. Despite the problems of arranging daily screenings on location in 3-D, instead of viewing them flat screen or on an editing machine, this is an important part of the process which should not be bypassed.

I do not subscribe to the idea that 3-D is the ultimate replacement of 2-D filmmaking. However, I do believe that when properly shot *and projected,* it is another viable and alternative format whose boundaries have not yet been fully explored. △



Things to Come . . .

July's *American* Cinematographer will serve up a healthy portion of *Legal Eagles*, with Laszlo Kovacs, ASC, as the teller of the tale. We will also explore the mysteries of *Poltergeist II* from the viewpoint of the Boss Film crew.

• • •

The horror of Jeff Goldblum as *The Fly* will be described in a summer issue of *American* Cinematographer. Photographed in Canada by Mark Irwin, the story will tell of some unusual cinematic challenges. In line with titles not of human extraction, *Howard, the Duck* will be along in late summer with some interesting production details from cinematographer Richard Kline, ASC.

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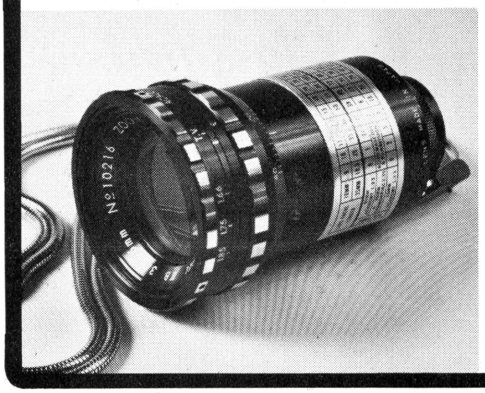

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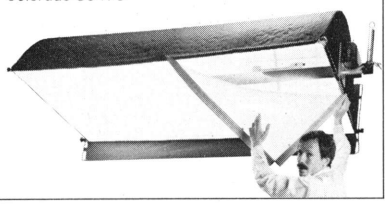

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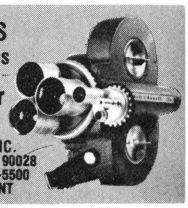

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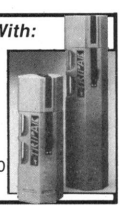

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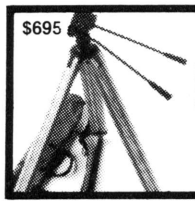
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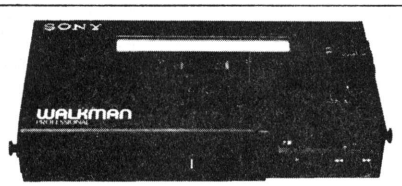

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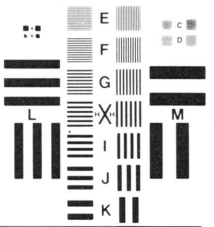

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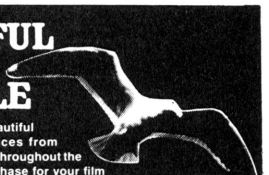

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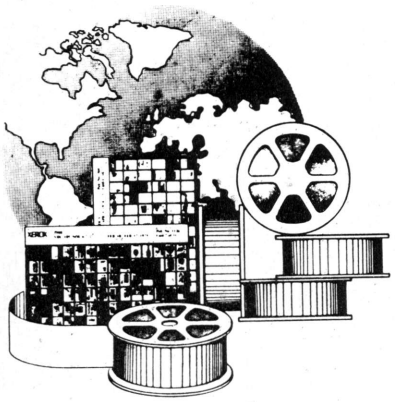

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From the Clubhouse

A 1986 State-of-the-Art Series of dinner programs was inaugurated at the February 24th meeting. William Hansard spoke of and gave a demonstration on new techniques in the art of rear projection.

On March 8, despite almost continual downpour of rain, Musco Mobile Lighting, Co. and "The Shotmaker" camera car held yard demonstrations of their products at the clubhouse.

• • •

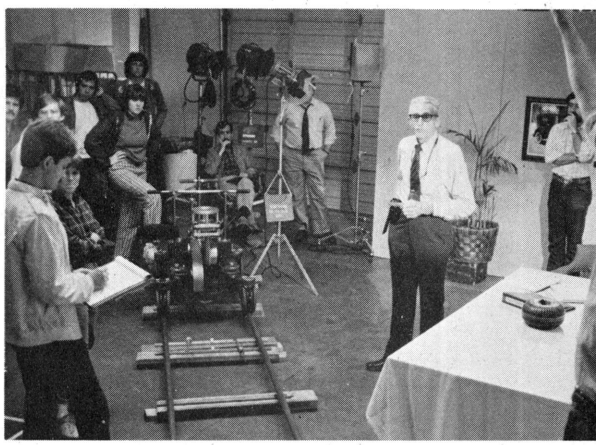
Allen Daviau, ASC, was a recent visiting artist from the Academy of Motion Picture Arts and Sciences to the University of Montevallo in Alabama. Daviau guided discussion sessions with students on his work in *The Color Purple* and *Twilight Zone: the Movie.*

A more recent Academy visiting artist was Stanley Cortez, ASC president, who spoke at a seminar sponsored at Kaufman-Astoria Studios in New York, called "Celluloid Cameramen and Their Work." Clips were shown from *Night of the Hunter* and *The Magnificent Ambersons,* as well as other features for which Cortez was director of photography.

Also appearing at the seminar sponsored by the American Museum of the Moving Image, were Ed Lachman, director of photography for *Desperately Seeking Susan,* Johanna Heer, *Sugarbaby,* and Carlo Di Palma of *Hannah and Her Sisters.*

• • •

Kemp Niver, associate member, presented a program of early motion pictures in Washington DC at the Library of Congress early this year. Niver, Hollywood film historian, author and restoration expert, is responsible for the invention of a process to restore film negatives from paper prints. When films were first made, copyright law did not cover them. However, still images were protected, so film pioneers such as Thomas Edison submitted rolls of paper prints containing frame-by-frame images, to satisfy the letter of the law. These prints were rediscovered in the basement of the Library of Congress in the mid-1930s and were recognized as invaluable, especially since the original nitrate negatives had not survived.



Victor Duncan teaches cinematography class

Niver developed an ingenious method for reconstituting these films from the paper prints, for which he was awarded an Oscar in 1954. With his editorial assistant, Bebe Bergsten, he has recently published a catalogue of the 3,000 films saved by this process. Among the films seen during the program were *Fred Ott's Sneeze,* the earliest copyrighted film to survive, D.W. Griffith's first film as a director, a Fatty Arbuckle comedy and several Edison documentaries.

• • •

Dallas, Texas was the scene of a recent workshop, "Basic Cinematography and Production Techniques" conducted by Victor Duncan, ASC. The three-week course involved students in shooting 20-second, 1-minute and 3-minute scenes with 16mm production equipment. Duncan said, "We built our own set for the class, which we anticipate using in future classes, as well."

The Mystery of Light

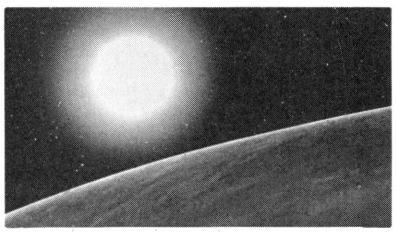
A recent article on this page, "Artistry With a Limited Palette," is a temptation to utilize a quote attributed to Leonardo da Vinci as presented in a new book by Khalil Seyrafi Ph.D., president of the Electro-Optical Research Company.

> "Look at light and consider it's beauty.
> Close and open your eye and then look at it.
> What you see of it, was not before; and what there was of it, is no more."

A wide understanding of this ultimately limiting condition is given in an excellent text, "Light: The Mystery of the Universe" being a progressive collation of scientific discoveries through history presenting ideas about light which have shaped human destiny. As prime recorders of historical re-enactments and history itself cinematographers may regard this book as much a reference as a primer to today's advancements in motion picture technology.

Current technologies lead us to revise our palettes, our methodology and, indeed, our very technique. This is a challenge that we can all rise to. It would be sad indeed if we rejected the paintings of Andrew Wyeth because they were not prepared after the fashion of Rembrandt. Each artist can rise to excellence after his own fashion, project his own philosophies, his own style, his own technique, his own manipulation of light and color. As an artist the cinematographer can work with a limited palette or with radiant auras of light. He can be a Rubens or a Goya. He can be a Russell Metty or a Geoffrey Unsworth.

As cinematographers we may conclude that electronic motion picture-making is a limited palette, just as the early two-color Technicolor films were, but it is erroneous to decry a fledgling innovation because one has embraced a traditional acceptance of current excellence. One must look to future advantages and combine the fruits of experience to beneficially influence the changes of today's thinking for future application.



"Light: The Mystery of the Universe" is a key to the understanding of discoveries in the scientific fields that have continually thrust changes upon us. As responsible filmmakers who catch fleeting images to hold for study before the inexorable force of time reduces them to decay, we have need of this understanding. As cinematographers now familiar with transistors, photodetectors, lasers, computers, motion repeats, an appreciation of their development lends itself to comprehension of their immediate significance. Recourse to Seyrafi's book provides this opportunity. The book is written in excellent prose and deals in abstruse theory with remarkable clarity.

It has also been stated that a person cannot step into the same river twice. Time, like a river, is in constant flow. The molecules of water that flow about your feet as you reach for the bed of the river will not be the same ones that you have previously stepped in. They are long gone to wash someone else's feet. Change then, is ever present and is irresistible. It is necessary to accommodate it or risk being eroded away like an immutable rock in a river. High definition television is a herald of change. It is not a new concept and is a matured and maturing technology. It has been researched in many countries. The system's ability to resolve fine detail, improve the color rendition, present a wide aspect ratio and present stereophonic sound make of it a competitor to the use of original color negative photographic stock.

It is not the purpose here to enter into a debate on the pros and cons vis-a-vis the electronic and photographic methodologies. At this point there are valid arguments to be made on the general efficacy of both systems which may well demand the continuing use of both sciences in tandem, as is the case at present. Amidst all the welter of claim and counter claim let us realize that we are continuing to deal with an art form. An art form, which, at its best, is a celebration of the imagination. There can be no creation without imagination and imagination requires time for thought. Instant electronic motion picture making may send an investor into raptures over his cost-saving opportunities but it will not hone a visual situation to a major emotional impact.

For the most part this has been the advantage of many fine motion pictures made through the photographic medium. It offers the time to assess a precise cut, a needed lighting change, to polish to the declamation of a performing artist; the ability to make a visual sequence different through quality; a psychological responsibility to the potential viewing audience beyond the spritz and glitz of the explicit. The explicit fleetingly gratifies the senses. It does not stretch the imagination; in fact, it brutalizes it. Imagination is everyone's most precious gift. It is the cinematographer's reason to be. To paraphrase Leonardo da Vinci:

> Look at light and consider it's beauty.
> Close and open your eyes and then look at it.
> What you see of it, was not before: and
> what there was of it, is no more
> but in your mind
> and heart . . . and soul.

—Wally Gentleman, BSC, CSC

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